OWNER'S MANUAL

DEHLER 29

Name of Boat

Order Number

640-

Design Category

B

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Yacht Manual DEHLER 29

Manual version 09.08.10

Your Distributor’s Stamp

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1.3 Introduction

This manual has been written and compiled to make it possible for you to use your sailing yacht, a DEHLER 29, in a safe and pleasant way.
Apart from many details regarding the yacht itself, the manual also contains details about the equipment supplied or integrated fittings and information on its use and maintenance, in addition to the information given by the manufacturer. Please read the manual through carefully and get familiar with everything before you go sailing with your yacht.

We recommend that you make copies of the important parts of the manual and of some of the manufacturer's information, such as instructions about maintenance and warnings, so as to have them handy on board in case you need to find out the cause of a technical fault quickly and remedy it.

*We hope you will enjoy your new **DEHLER 29** and wish you good luck and safe sailing.*

An owner's manual however can never replace the **knowledge of seamanship** which is necessary.

An Owner's Manual is a technical document which gives you a general description of the yacht and its technical systems. It helps the skipper/sailor to handle and maintain the yacht and its systems safely, identify possible technical faults and sometimes even to rectify these faults himself. Furthermore it is to the advantage of the owner to undertake maintenance and servicing of the Dehler 29 and thus maintain its value. Maintenance should only be done by experienced people. Changes which are done after delivery of the boat without any notice and confirmation by the yard are out of responsibility of the yard.

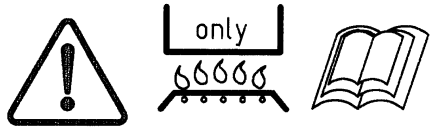
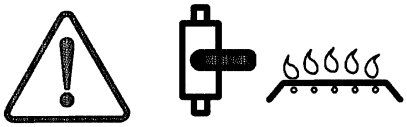
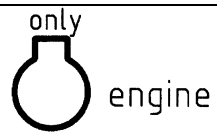
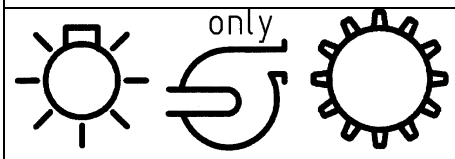
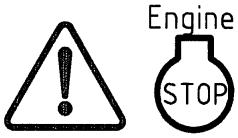
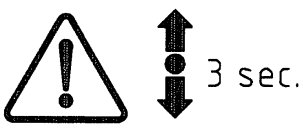
The shipyard reserves the right to carry out changes in equipment and technique. The systems represented in this manual should not be considered as a basis for the sales contract. In this respect you should use the construction specifications and the relevant price list for the purchase of your yacht.

PLEASE KEEP THIS MANUAL IN A SAFE PLACE AND GIVE IT TO THE NEW OWNER, IF YOU SELL THE YACHT.

This owner's manual is not a course on boating safety or seamanship. If this is your first craft, or if you are changing to a type of craft you are not familiar with, for your own comfort and safety, please ensure that you obtain handling an operating experience before "assuming command" of the craft. Your dealer or national sailing federation or yacht club will be advise you of local sea schools, or competent instructors. Ensure that the anticipated wind and sea conditions will correspond to the design category of your craft, and that you and your crew are able to handle the craft in these conditions. Even when your boat is categorized for them, the sea and wind conditions corresponding to the design categories A, B and C range from severe storm conditions for category A, to strong conditions for the top of the category C, open to the hazards of a freak wave or gust. These are therefore dangerous conditions, where only a competent, fit and trained crew using a well maintained craft can satisfactorily operate. This owner's manual is not a detailed maintenance or trouble-shooting guide. In the case of difficulty, refer to the boat builder or his representative. If a maintenance manual is provided, use it for the craft's maintenance.

1.4 Stick on notices - List

List of the most important information, indicated by stick on notices.
Observance of the notices is very important for both the boat and its crew. Non-observance of the notices can lead to total loss of the boat and problems for the crew. As the skipper are responsible for the boat's safety and you should inform new crew members about the notices and their meaning.

	Don't use the cooker for heating!	Notice on front trim of the cooker lid
	Shut off valve Gas Oven	Notice on the locker flap in the stern cabin port side
	Main switch Engine	Notice next to the switch on the engine bulkhead forward in the stern cabin
	Main switch General consumption	Notice next to the switch u-sofa salon
	Emergency shut-off valve Fuel Diesel engine	Sticker base of wetcell locker
	Only switch with neutral number of revolutions!	Sticker next to the Gas/Switch

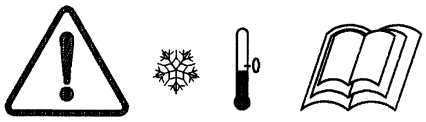
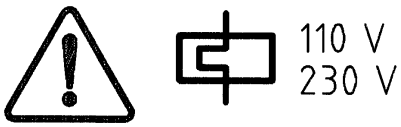
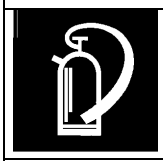
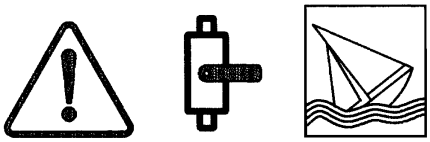
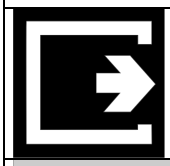
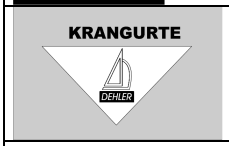
	Cold-resistant Please observe manufacturer's instructions!	Switch at navi place for boiler and head below cover WC
	Fuse 12V A= see print	Sticker in space U-sofa port side
	Automatic fuse 110V or 230V	Sticker next to the automatic fuse Shore connection in cockpitlocker star bord
	Sticker Fire extinguisher	Notice for fire extinguisher under navigation seat and under the aft locker starboard
	When sailing, close the sea cocks	Sticker on bulkhead storage stern, door wetcell locker, floorboard in front of head, galley door below sinks
	Notice for the escape hatch	Sticker on frame of escape hatch forward
	Lifting belt position	Four stickers on deck side
	Gas Installation Warnings	Sticker at the bulkhead for the gas bottle
	Notice for operating pressure of gazsystem	Sticker in gazbox

Figure 1: Warnings

1.5 Design Category

One of the requirements of the EC Directive on Pleasure Craft is that every boat must belong to a specific design category.

The yacht type DEHLER 29 belongs to Design Category B.

The Directive describes Design Category B as follows:

Design Category B: beyond coastal waters

Constructed for sailing beyond coastal waters in which weather conditions may occur with wind strengths of up to and including 8 on the Beaufort scale and a typical wave height of up to and including 4 m

1.6 Identification

For a yacht of this size the EC Directive only provides for B module certification. This means that the manufacturer certifies the conformity of its construction and equipment with the directive, but that its stability needs to be tested by a recognised testing institute. The Germanischer Lloyd one of the testing institutes authorised by the EC Directive, was in charge of testing; see the Statement of Conformity on page 12.

The hull identification number was stamped in the gel coat on the surface of the starboard side of the boat. This is a worldwide **unique** succession of numbers and letters. For example:

DE-DEH 64211K909

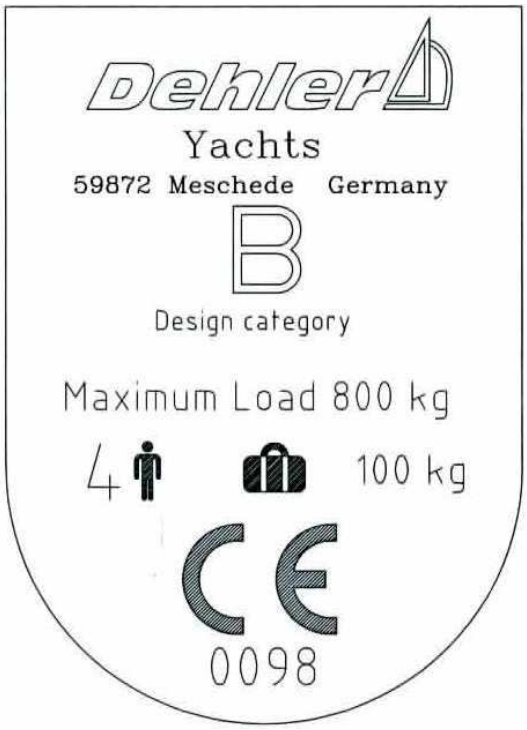
This succession of numbers and letters comprises the following data:

DE	Germany, Country of Origin
DEH	Unique Shipyard Code
	(the Register is kept by the German Boat and Shipbuilders' Association)
64	Designated Type as chosen by the shipyard
211	Serial Construction Number
K	Start of Construction Month November
9	2009, when construction started
09	End digits of the year 2010, when the yacht was delivered

Month	Code	Month	Code	Month	Code
January	A	May	E	September	I
February	B	June	F	October	J
March	C	July	G	November	K
April	D	August	H	December	L

1.7 Manufacturer's Plate

The manufacturer's plate on the companionway bulkhead starboard is a requirement of the EC Directive, giving certain data which are explained here.



Explanation of the information required by the Directive:

B	Design Category B: **beyond coastal waters**
Maximum Load (as ISO 14946)	This weight indication includes. persons, supplies, food supplies, water, fuel and personal equipment (see chapter 2.1.2.)
Max. no of Persons (4, in this case)	Maximum number of persons, recommended by the manufacturer, when the boat is located in a maritime area corresponding to its design category. (see chapter 2.4)

1.8 Statement of Conformity

DECLARATION OF CONFORMITY

for sports boats regarding design and construction as well as noise emission of sport boats according to guideline 94/25/EG revised by guideline 2003/44/EG

(to be filled out by the craft manufacturer)

Name of the craft manufacturer: Dehelr Yachts GmbH

Street: Im Langel 22

City: Meschede **postal code:** 59872 **Country (Abb.):** Germany

Name of the notified body for design and construction (if applicable)

Name: Germanischer Lloyd AG

Street: POB 11 16 06

City: Hamburg **Postal Code:** 20416 **Country (Abb.):** Germany **ID No.:** 0098

EC-Type Examination Certificate Number: **88.01.01120** **Date:** (Year/Month/Day) 1998/02/25

as far as evaluation is done according to ESR3.2 and 3.3:—————————— **Date:** (Year/Month/Day) --/--/----

Name of the notified body for noise emission (if applicable)

Name:
Street:
City: **Postal Code:** **Country:** **ID No.:**

Module(s) used for design and construction: **A** ☐ **Aa** ☒ **B+C** ☐ **B+D** ☐ **B+E** ☐ **B+F** ☐ **G** ☐ **H** ☐

Module used for noise emission: **A** ☒ **Aa** ☐ **G** ☐ **H** ☐

Other used directives:

DESCRIPTION OF THE CRAFT

Craft identification number (CIN) | **D** | **E** | - | **D** | **E** | **H** | **6** | **4** | | | | | | |

Model description : Dehler **Type or number : 29**

Type of craft

☒ Sailing boat ☐ Motor boat
☐ inflatable, dinghy
☐ other (describe):

Type of main propulsion

☒ Sail ☐ Gas engine
☐ Diesel engine ☐ Electric engine
☐ Rudder/Oars
☐ other (describe):

Type of craft hull

☒ Monohull ☐ Multihull
☐ others (describe):

Type of machine

☐ Outboard engine ☒ Inboard engine
☐ Z-drive without integrated exhaust system
☐ Z-drive with integrated exhaust system
☐ others (describe):

Building material:

☐ Aluminium, alloys ☒ Plastic, FRP
☐ Steel, alloys ☐ Wood
☐ others (describe):

Deck

☒ closed ☐ partially closed
☐ open
☐ others (describe):

Design category(n): ☐ **A** ☒ **B** ☐ **C** ☐ **D**

Engine performance **Maximum recommendation:** **16kW**
Installed **kW** (if applicable)

Length of hull L_H: 8.75 m **Width W_H:** 3.00 m **Draught D:** 1..58 m

This declaration of conformity is issued on the exclusive responsibility of the manufacturer. I hereby declare and affirm for the manufacturer or the proxy that the above designated craft meets the herein and overleaf listed requirements and correspond with the model for which an EC-Type Examination Certificate Number has been provided (delete the last part if an EC-Type Examination Certificate Number has not been provided).

Name and position: Volker Kodalle
(Person, that signs for the manufacturer or the proxy)

Signature and title:
(or respective symbol)

Date and location: **(Year/Month/Day)** **Freienohl,**

Essential requirements (reference to relevant articles in Annex IA & IC of the Directive)	Standards	Other normative document/ methods	Technical file	Please specify in more detail (*: Mandatory Standards)
General requirements (2)	☒			EN ISO 8666:2002 *
Craft Identification Number – CIN (2.1)	☒			EN ISO 10087:2006 *
Builder's Plate (2.2)	☐	☐	☒	
Protection from falling overboard and means of reboarding (2.3)	☒	☐	☐	EN ISO 15085:2002
Visibility from the main steering position (2.4)	☐	☐	☒	
Owner's manual (2.5)	☒	☐	☐	EN ISO 10240:2004
Integrity and structural requirements (3)				
Structure (3.1)	☐	☐	☒	
Stability and freeboard (3.2)	☒	☐	☐	EN ISO 12217-2:2001
Buoyancy and floatation (3.3)	☒	☐	☐	EN ISO 12217-2:2001
Openings in hull, deck and superstructure (3.4)	☒	☐	☐	EN ISO 12216:2002
Flooding (3.5)	☒	☐	☐	EN ISO 11812:2001 EN ISO 15083:2002
Manufacturer's maximum recommended load (3.6)	☒	☐	☐	EN ISO 14946:2004/AC:2005
Liferaft stowage (3.7)	☐	☐	☒	
Escape (3.8)	☒	☐	☐	EN ISO 9094-1:2003
Anchoring, mooring and towing (3.9)	☒	☐	☐	EN ISO 15084:2003
Handling characteristics (4)	☐	☐	☒	
Engines and engine spaces (5.1)				
Inboard engine (5.1.1)	☐	☐	☒	
Ventilation (5.1.2)	☐	☐	☒	
Exposed parts (5.1.3)	☐	☐	☒	
Outboard engine starting (5.1.4)	⊟	⊟	⊟	Not applicable
Fuel system (5.2)				
General – fuel system (5.2.1)	☐	☐	☒	
Fuel tanks (5.2.2)	☒	☐	☐	EN ISO 10088:2001
Electrical systems (5.3)	☒	☐	☐	EN ISO 10133:2001
Steering systems (5.4)				
General – steering system (5.4.1)	☐	☐	☒	
Emergency arrangements (5.4.2)	☐	☐	☒	
Gas systems (5.5)	☒	☐	☐	EN ISO 10239:2000
Fire protection (5.6)				
General – fire protection (5.6.1)	☒	☐	☐	EN ISO 9094-1:2003
Fire-fighting equipment (5.6.2)	☒	☐	☐	EN ISO 9094-1:2003
Navigation lights (5.7)	☐	☐	☒	
Discharge prevention (5.8)	☒	☐	☐	EN ISO 8099:2000
Annex I.B – Exhaust Emissions	see the Declaration of Conformity of the engine manufacturer			
Annex I.C – Noise Emissions[1]	☐	☐	☒	
Noise emission levels (I.C.1)	☐	☐	☒	
Owner's manual (I.C.2)	☐	☐	☒	

[1] Only to be completed for boats with inboard engines or sterndrive engines without integral exhaust

2. Description of the boat

2.1 Main data

Length overall	Lol	8.75 m
Length waterline	Lwl	8.75 m
Maximum beam	Bmax	3.00 m
Beam hull	Bh	2.95 m
Draught hull	Dhull	0.37 m
Max. draught standard keel	Dmax	1.58 m
Side height midships	Db	1.05 m
Transport height standard keel without support	HT	3.29 m
Full height mast*	HD	14,05 m
Full height mast with additional antennas	Hmax D	

Mainsail 26,0 m², foresail of 16,0 to 59,0 m² (max. Sailareas)

Unladen weight standard keel	Uw	3000 kg
Max. weight standard keel	Vmax	3500 kg approx**.**
Keel weight standard keel 195 cm	Gs	1100 kg
Total maximum load (see chapter 2.1.1)		960 kg

VOLVO inboard diesel engine, type **D1-13 8,6 kW/11,8 PS**
Optional**:** VOLVO inboard diesel engine, type **D1-20 13,3 kW/18 PS**

230 V Alternating current

Landline installation with battery charger and a 230 V socket

12 V – Direct current installation

Batteries

Starter battery and use batterie 1 x 12 V 75 Ah AGM
- Or Batteries 1 x 12 V 95 Ah AGM

Tanks

1 PE fresh water tank	100 l
1 PE fuel tank	60 l
1 PEl WC holding tank	35 l

2.1.1. Load

IMPORTANT

When loading the craft, never exceed the maximum recommended load. Always load the craft carefully and distribute loads appropriately to maintain design trim (approximately level). Avoid placing heavy weight high up.

Numbers of persons: **4 Persons**	**300**	**kg**
Basic equipment	**100**	**kg**
Stores and cargo	**340**	**kg**
Consumable liquids, portable tanks	**20**	**kg**
Liferaft	**40**	**kg +**
Maximum load		
(according manufactor´s plate)	**800**	**kg**

Capacity of fixed tanks		
Diesel (60 ltr)	**60**	**kg**
Water (100 ltr)	**100**	**kg +**
Total maximum load		
	960	**kg**

IMPORTANE

Always store personal equipment and portable parts in a position where they are unable to move in case of high waves or heeling of the boat.

2.2 Height

- The full height can be critical when you have to pass under a bridge or a high voltage line. It is the height above the **waterline up to the highest point of the mast.** It is measured without possible antennas or radar reflectors but does include the measurement for the WINDEX. Please correct the measurement if you install any additional gear and mark it in the last line of the main data.

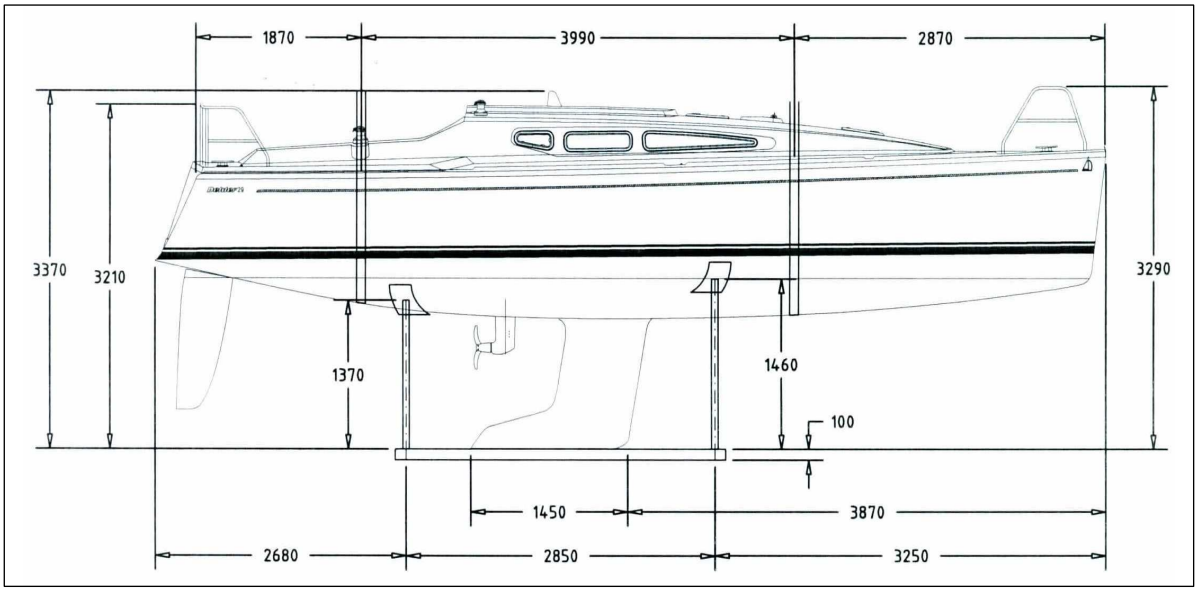


Figure 2: Transport measurements

2.3 Transport measurements

Please see drawing.

2.4 Maximum number of persons

The Directive requires a maximum number of persons on board as a defined recommendation, when the boat is sailing in the conditions it is intended for. The **Dehler 29** is designed for offshore navigation, that is to say trips of several days between different ports. Therefore we recommend the following:

- For sailing trips lasting several days, no more than 4 persons should be on board, since this is the maximum number of berths available;

- **Note:** There **must** be enough life-jackets on board for all persons on the boat. An inflatable life-raft should have enough space for at least 4 persons.

For day trips, if possible not more than 6 persons should be on board, since there is only enough space for this number in the cockpit. For very short trips, the number can be increased.

- **Note:** There **must** be enough life-jackets on board for all persons on the boat.

IMPORTANT

Do not exceed the maximum recommended number of persons. Regardless of the number of persons on board, the total weight of persons and equipment must never exceed the maximum recommended load. Always use the seats /seating spaces provided.

2.5 Life-raft

A life-raft corresponding to the sailing area designated by the design category must be mounted in the place provided on deck. The life-raft must have enough room for all people on board.

NOTE
According to the cabin version, a 4 man life-raft
must be stowed under the
helmsman's seat

2.6 Cranes

In many harbours yachts are taken on land with a crane and hoisting gear. Belts have to be placed taking into account the solidity of the boat's build and the distribution of weight. On the **Dehler 29**, the recommended lifting points are marked on the edge of the coaming. The forward lifting point ,you see in the drawing With reference to these markings, the belts should not be displaced more than as follows:
Rear and front: max. 200 mm forwards or backwards.

3. General Drawings

3.1 Layout

1. Bow berths

2. Water tank

3. Sofa

4. Navigation area

5 Engine room

6 Head

7 Holding tank

8. Fuel tnak

9. Storage room

10. 2. Consumer Battery (Option)

11 Consumer Battery

12 Battery engine

13 Galley

14. Gas cooker

15. Cooling locker (Option)

16. Aft cabin

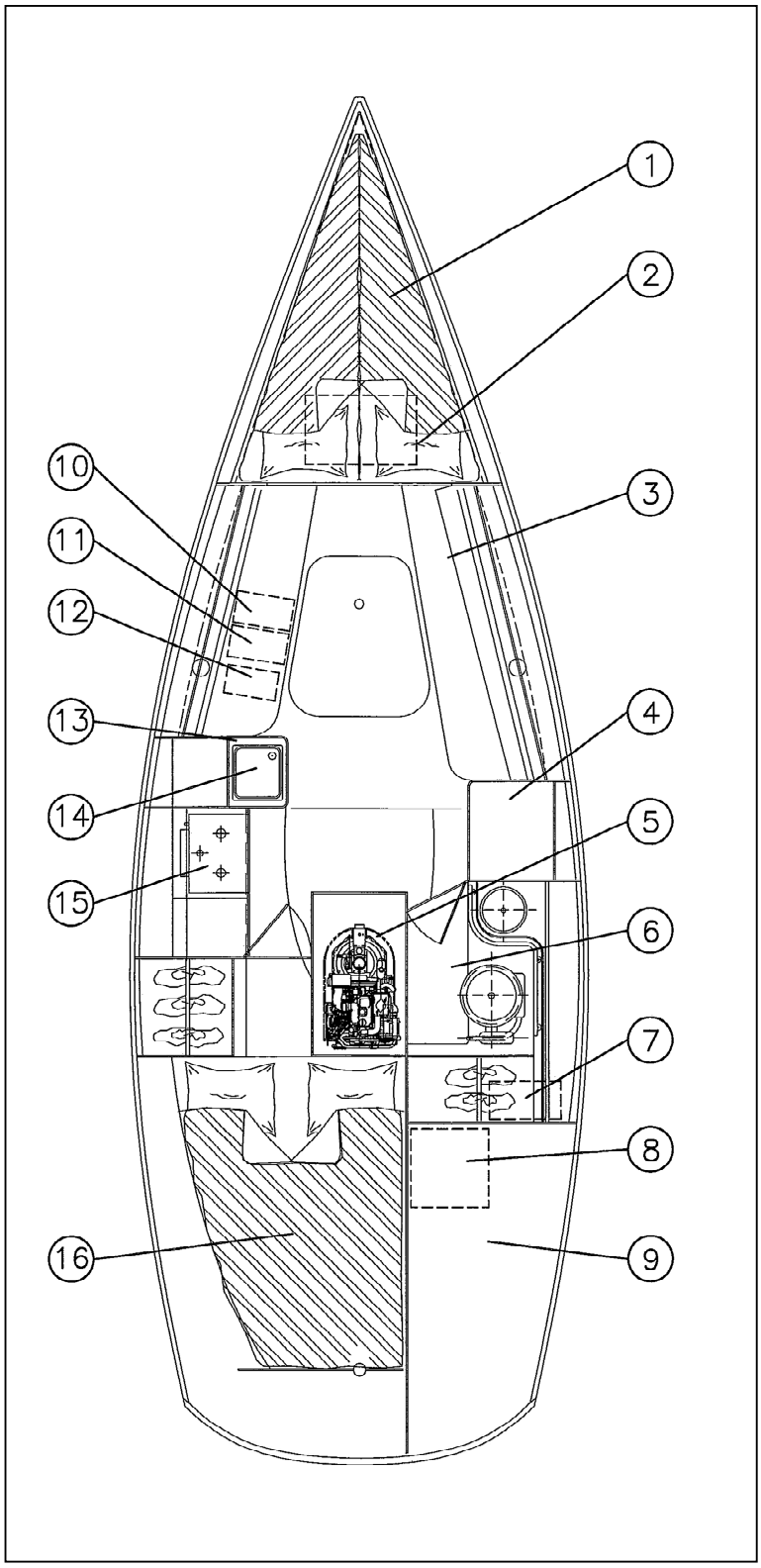


Figure 3: General

3.2 Deck plan

Components

1. Forestay fitting
2. Spring cleat
3. Pushpit
4. Anchor locker
5. Padeye for Spi.-Boom (Option)
6. escape hatch
7. Filler plug Water
8. Self tracking jib rail
9. Organizer 4-fach
10. Wantenpütting
11. Padeye
12. Saloon hatch (Option)
13. Genua track with traveller
14. Halyard stopper
15. Genua sheet block
16. Halyard-/Sheet winch
17. Filler plug fuel
18. winch handle pocket
19. Traveller rail (Option)
20. Air vent fuel tank
21. Genua-/Spi. Winch (option)
22. Block mainsheet
23. storage for lift raft
24. Pulpit with flagstaff holder
25. heater chimney
26 backstay futtung
27. Drainage pump
28. swimming ladder

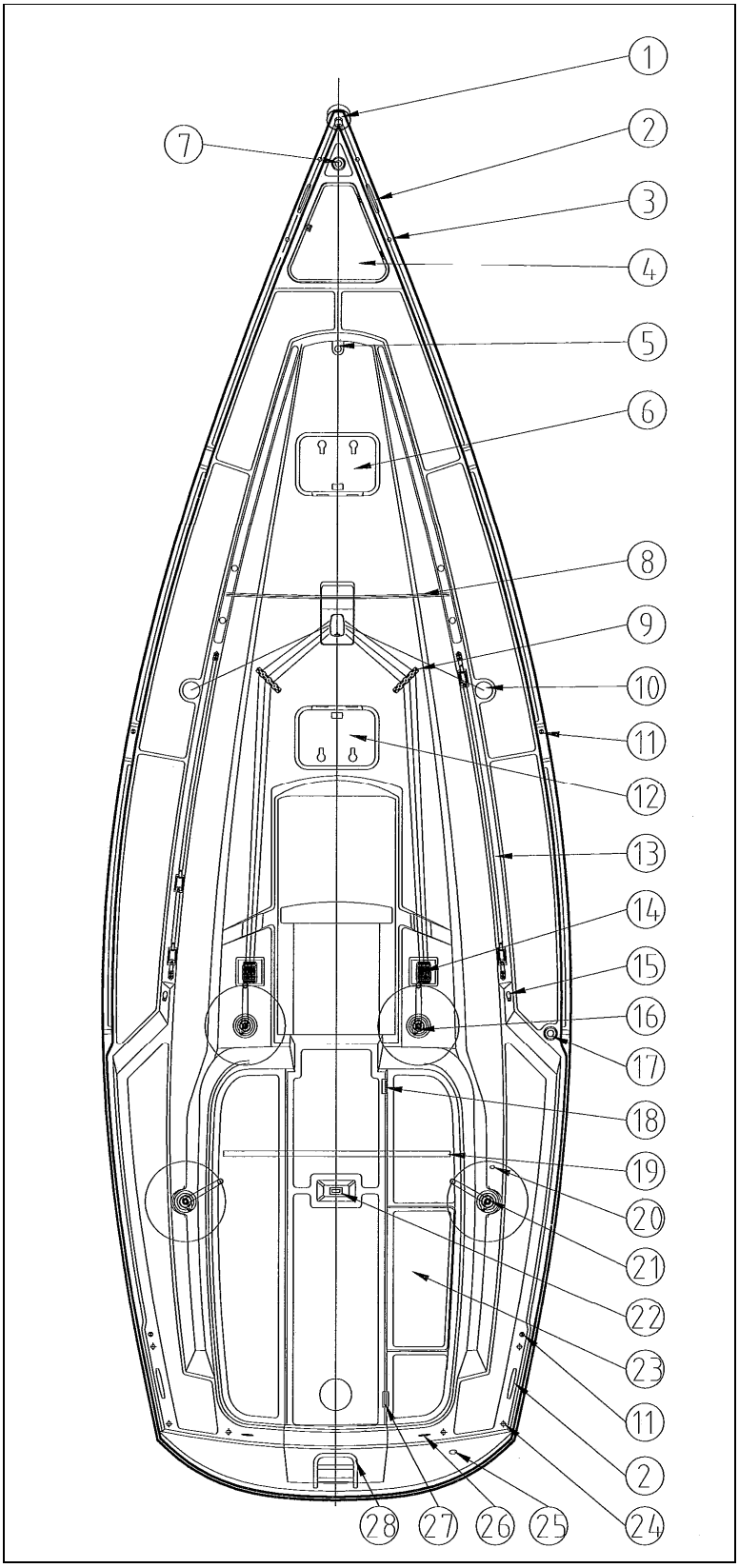


Figure 4: Deck plan

3.2.1 Deck

The deck is a sandwich construction. Balsa wood of different thicknesses is used as intermediate layer. In areas with a lot of strain reinforcements of aluminium, plywood or solid wood are used.
Fittings such as genoa slides, halyard pegs, winches, deck hatches or rollers are screwed and sealed with a flexible silicone rubber substance.

Attention
There must be a 4 Person liferaft in the liferaft storage in the cockpit locker.

IMPORTANT
Please keep portlights, windows, washboards, doors hatches or ventilation openings closed when appropriate, e.g. in rough weather or at planing speeds. If necessary, provide operating instructions.

3.2.2 Guard rails

The deck is equipped with a pulpit, a pushpit, an integrated safety ladder/swimming ladder and guard rail supports. The deck guard rail has a continuous height of 610 mm. The eight railing posts and the bolts for the pulpit and pushpit are screwed on the aluminium deck reinforcement and glued with epoxy resin.

3.3 Sail plan

Mainsail	26.0 m^2
Jib 105 %	19.0 m^2
Spinnaker approx.	59.0 m^2
Gennaker	51.0 m^2

The canvas quality is chosen for the wind strain corresponding to the sails. The mainsail can be reduced by two one-line quick reefings. The otpional selftracking jib is running at a roller bearinged traveller on a round rail.

3.3.1 Sail dimensions

- P = 11.00
- E = 4.00
- I = 11.25
- J = 3.15

With these data any sailmaker can make the sail you require.

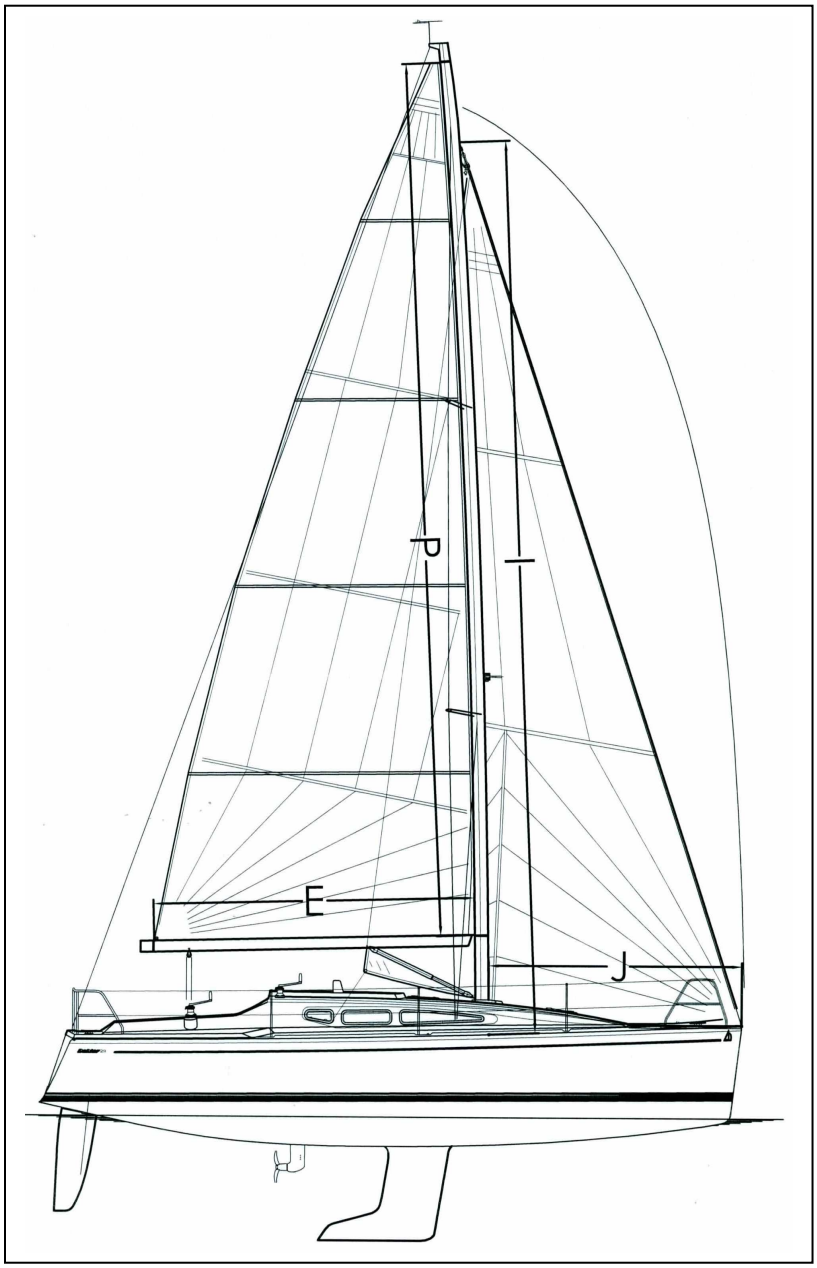


Figure 5: Sail plan

3.3.2 Rigging plan

- The mast is placed in a mast rail under the deck:
- Mast length 12.26 m
- Boom length 4.26 m

Section profile: Mast Selden 156/87, Boom 120/62

Boom is fitted with Selden automatic reefing system for reef 1 and reef 2. By this your are able to reef sail by only one line.

3.3.3 Halyard running

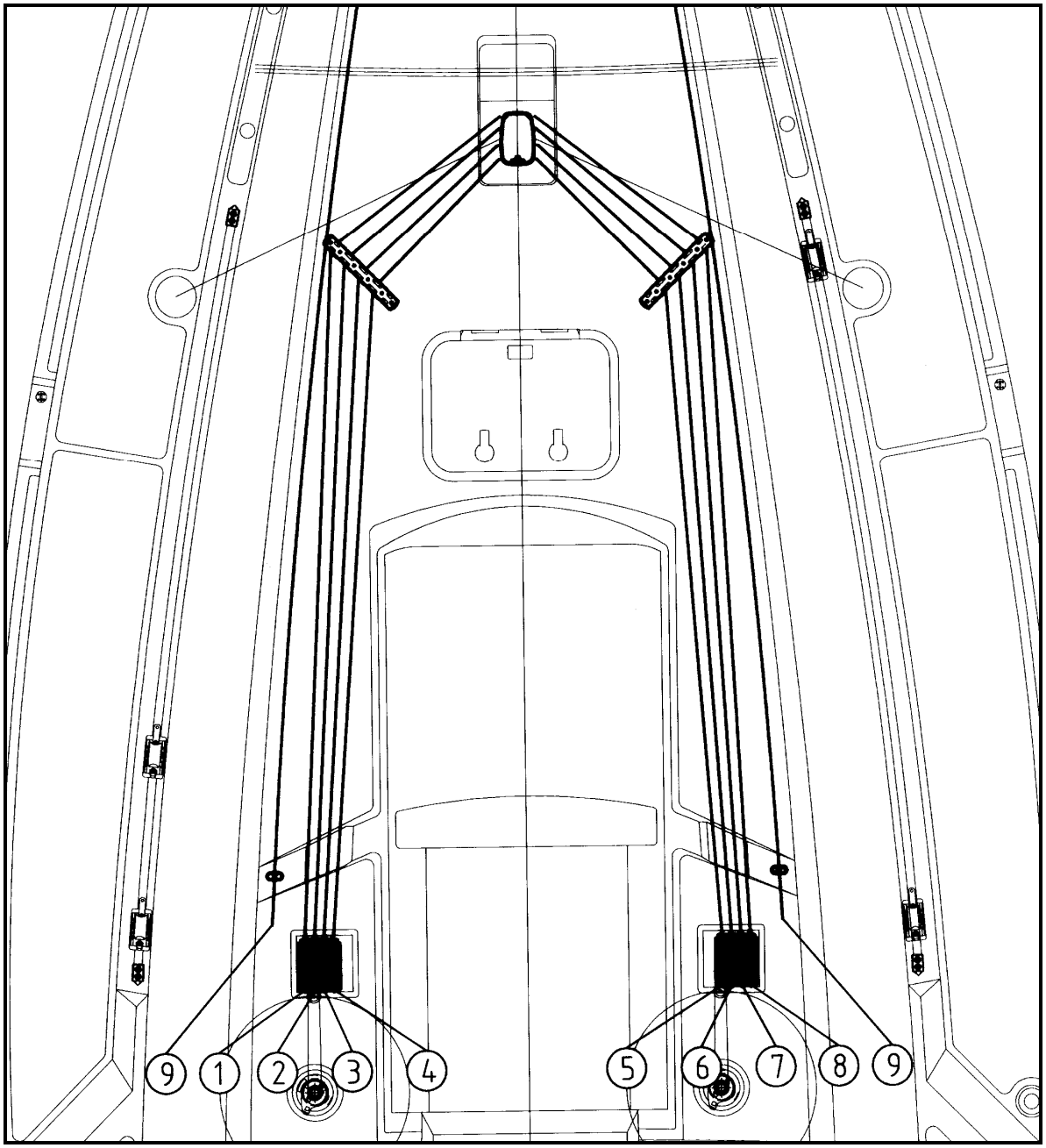


Figure 6: Halyard running

1 Topnant Spi.
2. Main halyard
3. Reefing I
4. Boom vang
5. Outhaul
6. Reefing II
7. Jib halyard
8. Spi.-Halyard
9. Spinnaker downhaul

3.3.4 Genoa slide / Main sheet traveller

Genoa slide and main sheet traveller are adjusted progressively with pin stop. The adjustable top setting of the genoa slide is particularly sensible with a foresail roller reefing system.

3.4 Shrouds, stays and halyards

3.4.1 Measurement Rigg

Dyform rig Dimensions

Forestay
Type Dyform 6mm Ø 11630 mm

Backstay
Type Dyform 5mm Ø 10265 mm

Bridle Backstay
Type Dyform 5mm Ø 3800 mm

V1
Type Dyform 6mm Ø 3710 mm

D1
Type Dyform 6mm Ø 3780 mm

V2/D3
Type Dyform 6mm Ø 7005 mm

D2
Type Dyform 4mm Ø 3405 mm

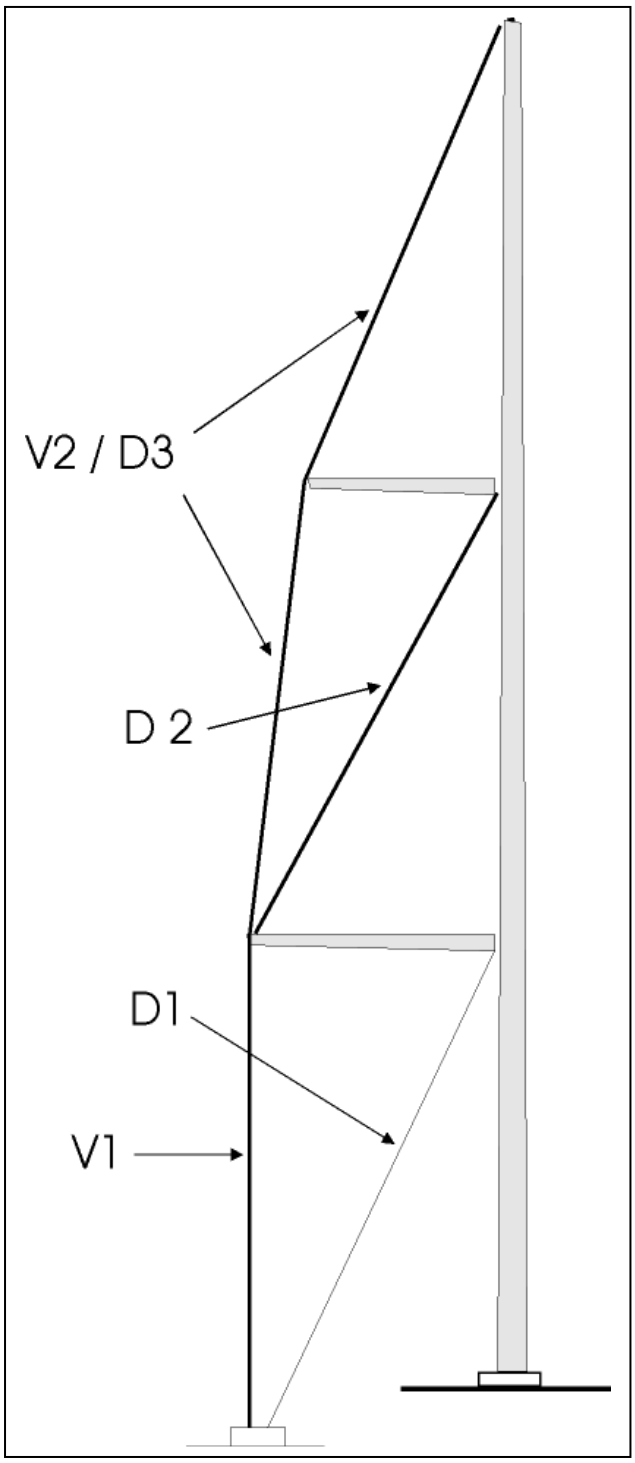


Figure 7: Shrouds Stays

3.4.2 Forestay with Furlex-system 100S

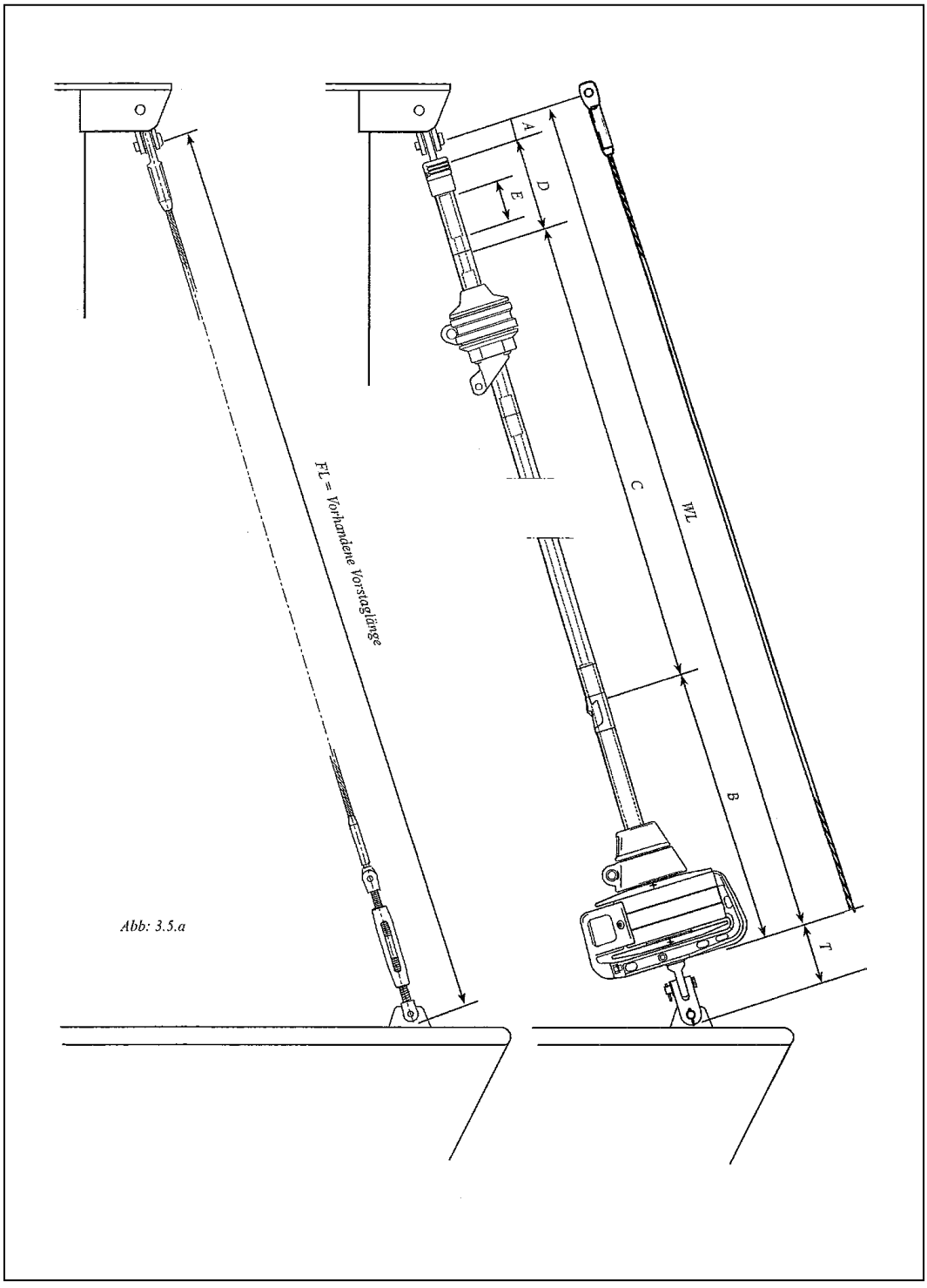


Abb: 3.5.a

Here is a copy of table Dehler-29 from the furlex manual.

Furlex fitted above deck, but with the forestay fitting in the anchor well.

Use the Furlex extension toggle. For a larger gap, use a custom-made stainless steel bar or rod stay. For Ø 6 only, the Furlex rigging screw or extension link may also be used.
Short wire pendants are not recommended as forestay forces may not be distributed evenly, and wire will not resist the torque which may be produced.

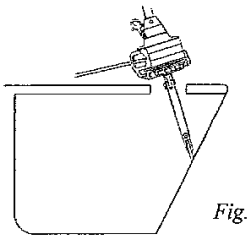


Fig. 3.4 d.

3.5 Calculating the length of the forestay wire

1. Determine the rake of the mast with the fore-/backstay tensioned.
2. Slacken the **backstay** as much as possible, but make sure that any rigging screw is not unscrewed so far that the threads are no longer visible "on the inside". The forestay setting should not be adjusted. If there is insufficient adjustment in the backstay, and the forestay must be adjusted to allow removal, first mark its thread with adhesive tape.
3. Pull the masthead forward using the genoa halyard. Secure the halyard using a "D" shackle or tie it to a strong deck fitting. For safety reasons, do not use the halyard snap shackle.

⚠ **Always use a strong "D" shackle or tie the halyard!**

4. Take down the forestay. If it was slackened, adjust the rigging screw back to the tape marks.
5. Measure the forestay length (FL) **with just enough tension to keep it straight.**
6. Enter the measurement in **Calculation Table 1** below, under the heading "Your forestay", in the row marked FL.
7. Calculate the new wire length WL in Table 1. Refer to the column marked "example" to see how this is done.

D29

3.5.1	Table1: Calculation of forestay wire length	Your forestay	Example Ø5
FL	Existing forestay length (FL), including rigging screw (See fig. 3.5.a)	11.580	~~9.675~~
T	Deduction for lower wire terminal: Ø 4 mm wire: – 45 mm (1 3/4") Ø 5 mm wire: – 55 mm (2 5/32") ✖ Ø 6 mm wire: – 70 mm (2 3/4")	- 70	- ~~55~~
H	If a Furlex rigging screw (Ø 6 mm forestay only), links or extra toggles are to be used, deduct this length (H) from FL.		
WL	Cutting measurement. The new forestay wire is to be marked at this point.	= 11510	= ~~9.620~~

3.6 Calculating the length of the luff extrusion

1. Insert the length of the new forestay wire (WL) as calculated in **table 1** into **table 2,** in the row marked WL.
2. Calculate the number of full length extrusions and the length of the top extrusion.

3.6.1 Table 2: Calculation of luff extrusion length		Your extrusion	Example Ø 5
WL	Length of new forestay wire (as per Table 1)	11510	~~9.620~~
A+B	Fixed deduction (A+B): Ø 4 mm wire: – 1340 mm (4' 4 3/4") Ø 5 mm wire: – 1340 mm (4' 4 3/4") ✖ Ø 6 mm wire: – 1290 mm (4' 2 3/4")	- 1290	~~1.340~~
C+D	C+D=	=10220	~~8.280~~
C	Max. number of 2400 mm (7' 10 1/2") extrusions which together are shorter than C+D: [4 x 2400 = C] C=	- 9.600	(3 extrusions) - ~~7.200~~
D	Length of top extrusion = The top extrusion is normally cut from the 2000 mm extrusion. Round the edges of the cut end using a file. If the top extrusion is shorter than 400 mm (15 3/4"), the joint will be too near the top. In this case replace the uppermost full-length 2400 mm extrusion with the 2000 mm extrusion. In this way the joint is moved 400mm (15 3/4") down the stay. Adjust the C and D measurements as follows: Deduct 400 mm (15 3/4") from the C measurement. Add 400 mm (15 3/4") to the D measurement.	= 620	~~1.080~~
E	Cut the distance tube for the top extrusion in accordance with the following fixed deduction: Ø 4 mm wire: E = D – 120 mm (4 3/4") Ø 5 mm wire: E = D – 120 mm (4 3/4") ✖ Ø 6 mm wire: E = D – 200 mm (7 7/8") Deduction: Length of distance tube E =	-200 = 420	~~-120~~ = ~~960~~

3.5 Summary of halyard sizes

Name	Material	Diameter	Length	Identifying thread
Genoa halyard	HMPE	8 mm	26 m	blue
1st Spinnaker halyard	Liros-Herkules	8 mm	28 m	red
Main halyard	HMPE	8 mm	29 m	white
Main sheet	PET	10 mm	31 m	white
Boom vang	PET	10 mm	12 m	white
Reefing 1 (part 1)	PET	8 mm	16 m	blue
Reefing 1 (part 2)	PET	8 mm	4.9 m	blue
Reefing 2 (part 1)	PET	8 mm	24 m	red
Reefing 2 (part 2)	PET	8 mm	4.9 m	red
Outhaul	wire	4 mm	3,54 m	
Genoa sheet	Liros-Herkules	10 mm	12 m	blue
Flag halyard	Liros-PES-Felschtschur	4 mm	14 m	white
Backstay tackle	PET	10 mm	16 m	white
Service line Traveller	Liros-Herkules	8 mm	6 m	white
Spi-Boomhalyard	Liros-Herkules	8 mm	16 m	yellow
Spi-Boomdownholer	Liros-Herkules	8 mm	21 m	yellow
Spi-Sheet	Liros- Dymanic plus	8 mm	21 m	red
Spi-Barber	Liros-Herkules	8 mm	7 m	white

4. Description of inboard systems

4.1 Engine installation

The **Dehler 29** is equipped with a Volvo engine installation and Saildrive. The table shows you the most important data. At the same time we would like to refer you to the extensive information provided by Volvo. As skipper, you must be familiar with the safety and maintenance indications.

Manufacturer	Volvo	Volvo
Type	D1-13	D1-20
Number of cylinders	2	3
Cylinder capacity	510 cm^3	8760 cm^3
Rated power	8,6 kW / 11,8 PS	13,3 kW / 18 PS
rpm	3.200 U/min	3.200 U/min
Cooling	Fresh water cooling with heat exchanger	Fresh water cooling with heat exchanger
Reduction ratio	2,19: 1	2,19: 1
Saildrive gearbox	130S	130S
Dry weight	ca. 126 kg	ca. 144 kg
Three phase current generator	14 V 115A	14 V 115 A
Fixed screw	16 x 11"	16 x 12"

According to the manufacturer there may be slight differences in pitch and diameter

As regards the installation the engine compartment is insulated on partition bulkheads. The engine is accessible if you remove the stairs of companionway. In addition you can open a flap hatch in the shower room and in the rear cabin to get access to all the important components of the engine. Oil dipstick is able to be controlled through maintenance hatch in portside stern cabine.

4.1.1 Exhaust system

The yacht is equipped with a wet exhaust system, i.e. cooling seawater is injected into the exhaust outlet pipe, which cools the exhaust fumes. This mixture is taken downwards to a silencer/water collector – mounted under the double berth. The pipe continues on towards the stern and forms a swan's neck in front of the starboard inner edge of the transom.
The exhaust pipe is made of synthetic rubber reinforced with a steel spiral. The pipe is heat-resistant, although with certain limits. Do **not** interrupt the sea water supply. Attention must be paid therefore to provide a continuous supply. The pipe is fixed at all connection points with two clamps.

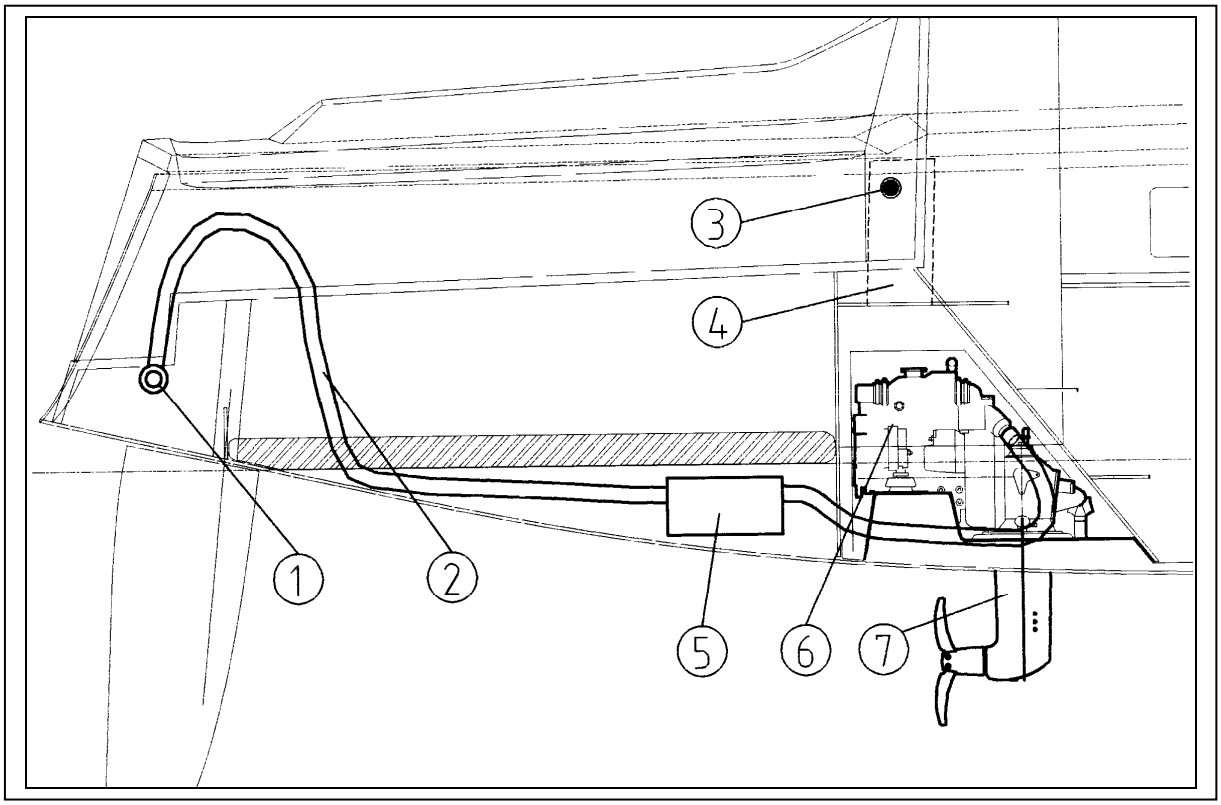


Figure 8: Engine installation

Components

1 = Exhaust
2 = Exhaust pipe with swan´s neck
3 = Ventiltor to cockpit
4 = Ventilation betwenn bulkhead and innerliner
5 = Water lock
6 = engine
7 = Saildrive

IMPORTANT
Every time after starting the engine, you should check that cooling water is being expelled with the exhaust fumes at the outlet!

4.1.2 Propeller

The yacht can be fitted with either a fixed screw or a folding screw.

IMPORTANT
In freshwater areas the zinc ring (3) must be replaced by a magnesium ring.

4.1.3 Fuel tank

A 60 l fuel tank is installed in cockpit locker on starboard. It is filled through the screw cap on the main deck (marked FUEL with symbol).
Supply of and return to the inboard diesel engine occurs through a fixed copper pipe with fireproof fuel hoses at the ends in accordance with ISO 7840. Out-board ventilation of the fuel tank is carried out via a swan`s neck in the locker to the starboard deck and exits at the starboard side edge under the cover at stern.

Figure 9: Fuel tank

4.1.4 Fuel supply/circulation

The feed pipe has been mislaid from the inlet pipe on the fuel tank, via a quick shut off valve on the fuel pipe to the coarse filter/water separator under the bunk in the stern cabin and on to the fine filter and diesel pump. The engine return pipe to the tank is situated almost parallel. A quick shut off valve is installed on the feed pipe. This can be reached through the aft locker in the head.

IMPORTANT
Perfect running of the engine is only possible with clean fuel. Therefore it is absolutely essential to regularly inspect and clean the filter and water separator.

Warning
Turn off the engine, heating and the cooker when filling the tank.
Never smoke while filling the tank!

Never approach with a naked flame!

WARNING
To ensure that the fuel system does not draw in any air, switch over from the port fuel tank to the starboard fuel tank in good time.
Regularly check the fuel level on the E-Panel in the navigation area!
20% fuel reserve should be kept, as all of its capacity may not be usable according to trim and loading

Components

1. Enigne
2. Feed pipe
3. Return pipe
4. Filter
5. Activator emergency switch
6. Sensor
7. Emergency switch
8. Filling cap
9. ventilation tube
10. Fuel tank

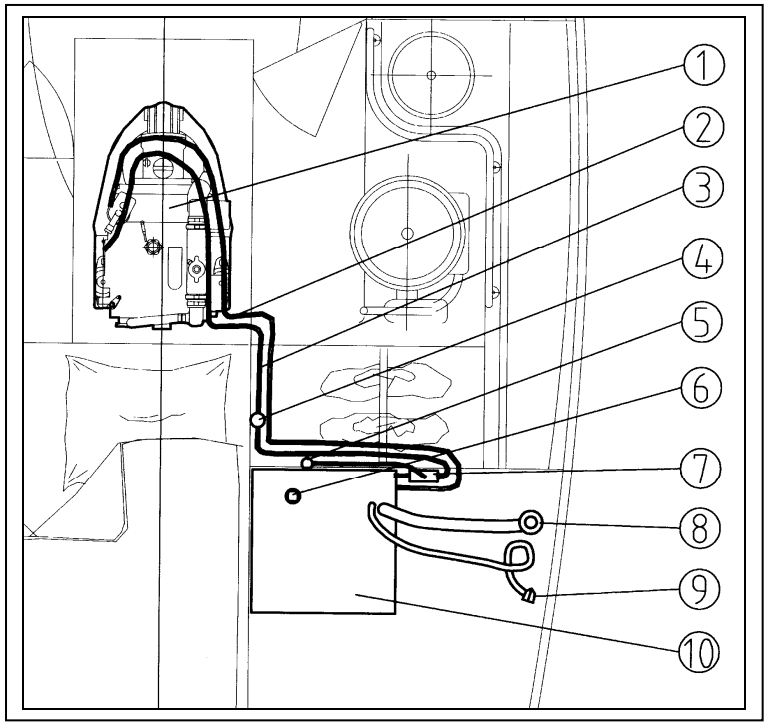


Figure 10: Fuel lines

4.1.5 Engine switch panel

The engine switchboard with a control lever is installed in the cockpit's coaming starboard. All other information can be found in the extensive information provided by Volvo.

4.1.6 Engine monitoring

It is especially important to heed the engine temperature light in calm and tidal waters. If the water supply is disturbed engine over-heating may rapidly occur. As the light does **not** fall in the field of view of the skipper an audible warning signal should reliably prevent such a situation. See also the instructions in the Volvo manual.

NOTE
The single lever circuit is a combination between a circuit and a throttle. Always allow a few seconds in neutral between gear changes, to take care of the gear.

NOTE
Please avoid contact of flammable material with hot engine parts.
Please prevent damage of to fuel lines.

4.2 Fresh water, drinking water

The **Dehler 29** has a polyurethane water tank, with a capacity of 100 l. It is installed under bow beths. The filler cap is on the bow on the deck. An electric pressure water pump with a secondary surge tank supplies the sink and the washbasin in the toilet area.

Components

1. Filler cap

2. Ventilation tank

3. Water tank

4. Pressure water pump

5. Hand washbasin outlet

6. Cold water outlet head

Tip

The tank has an inspection hatch for cleaning purposes.

Every now and then the water in the tank should be freshened. In addition, common water purification agents should be used.

Attention

The jubilee clips should be tightened annually

When there is a risk of frost the system should be drained via the bilge pump tubes while the cold-water supply is stopped.

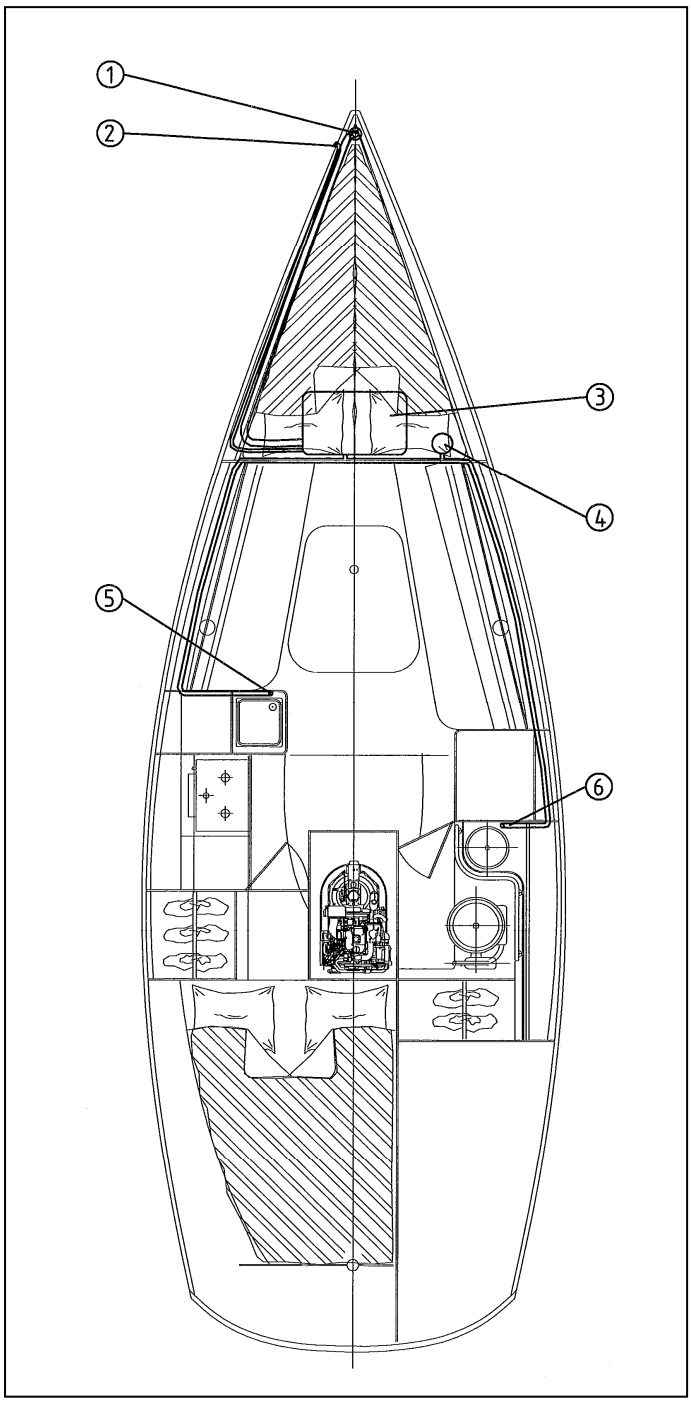


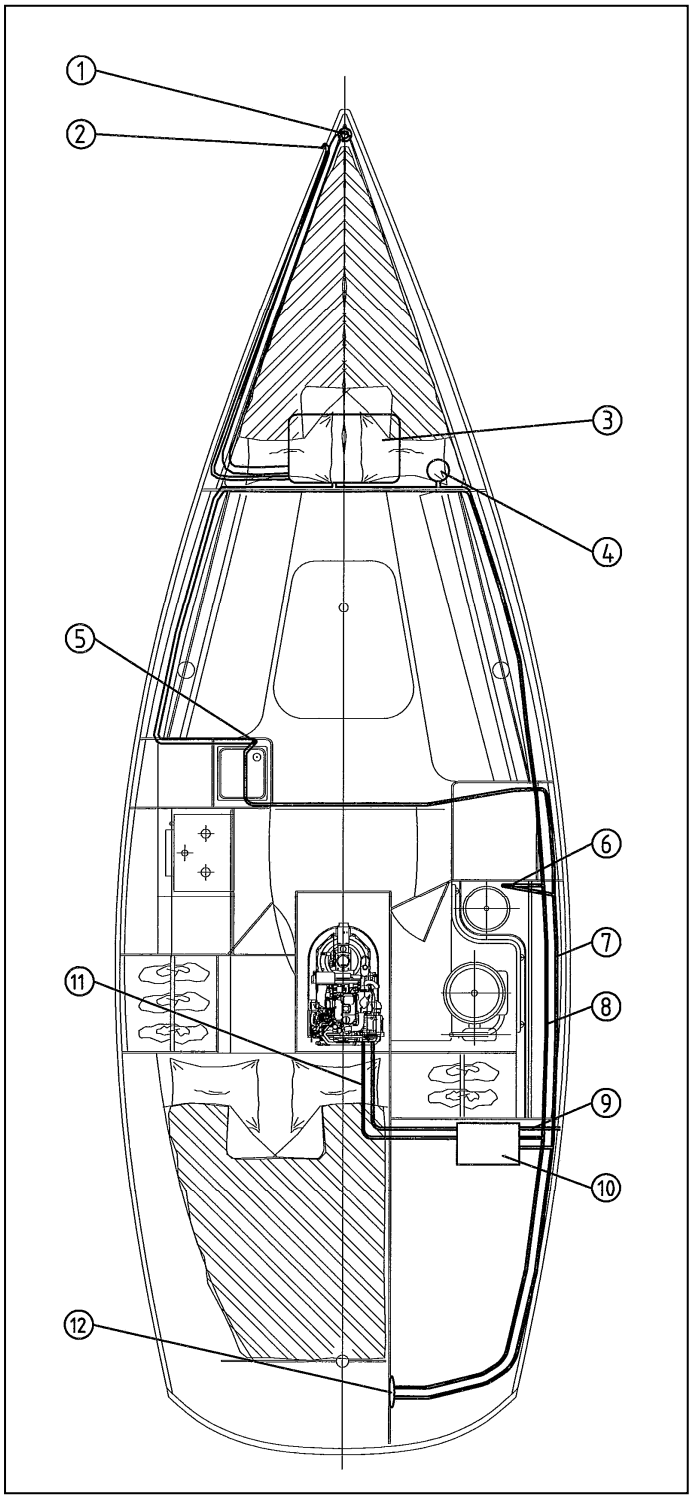
Figure 11: Drinking water

4.2.1 Fresh water, hot (Option)

A heat exchanger is optionally installed for hot-water production. It is accessible via the cockpit locker on starboard. The engine cooling-water is used as the heat source. As the engine is only supposed to be used in case of no wind and for manoeuvring in the marina, the heat exchanger also has an electrical heating cartridge that is operated in the harbour using the 230 V alternating current circuit.

Cold fresh water is supplied via the pressure pump. The expansion tank in the cold-water circuit also reacts to the withdrawal of hot water. There are two tapping points.

A heat exchanger with a 22 l capacity is installed for the production of hot water. It is situated in the starboard rear storage space



Components

1. Filler cap
2. Ventilation tank
3. Water tank
4. Pressure water pump
5. Hand washbasin outlet
6. Cold water outlet head
7. Warm water pipe
8. Cold water pipe
9. Ventilation warm water boiler
10. Warm water boiler
11. Warmwater chager engine
12. cockpit shower

4.2.2 Cockpit shower (Option, only with warmwater)

The fresh water tank also supplies the cockpit shower. The unit is installed on the cockpit starboard

4.4 Alternating current installation

If the yacht is equipped with a 230 V shore connection unit, when you are mooring in a harbour, you can feed power into the onboard system with a connection cable. The socket is to be found at the end of the cockpit. There is a 230 V socket in the shore connection unit in the space under the navigation table.

4.4.1 Shore connection unit

- Manufacturer Philippi
- On/off switch, battery charger
- FI- protection switch
- System control light
- On/off switch, heat exchanger
- with control light
- 230 V safety socket

Charging of the battery starts once the shore connection cable is plugged in. The 230 V socket is likewise ready to function. It is exclusively for electrical use. Please think about the power limit of land sockets. The feed for hot water heating in the heat exchanger has fixed cabling, which is separately switched and protected.

Figure 12: Shore connection panel

4.4.2 Battery charger Sterling

Name	Standard
Model	PT1230
Voltage	230/110V
Power	30 Amp.
Charging voltage	14,25-13,25V
Charging characteristic	IUoUo

NOTE
Please make yourself familiar with the **safety instructions** attached for the battery charger!

4.5 Onboard direct current system

The 12 V direct current system is responsible for the power supply for all general use appliances. The 12 V – Plus load circuit can be switched off using the main switches next to the port companion way and with the second master switch of the starter battery. The 12 V power supply is comprised of the following main components/power supply sources.

Starter - consumer battery, motor generator (dynamo), and a battery charger

4.5.1 Master switches

The master switches of engine and consumer batterie is mounted portside saloon sofa.

Figure 13: Master switches engine

4.5.2 Arrangement of main fuses

The following main fuses are to be found under the saloon sofa port side behind the batteries – depending on the equipment:

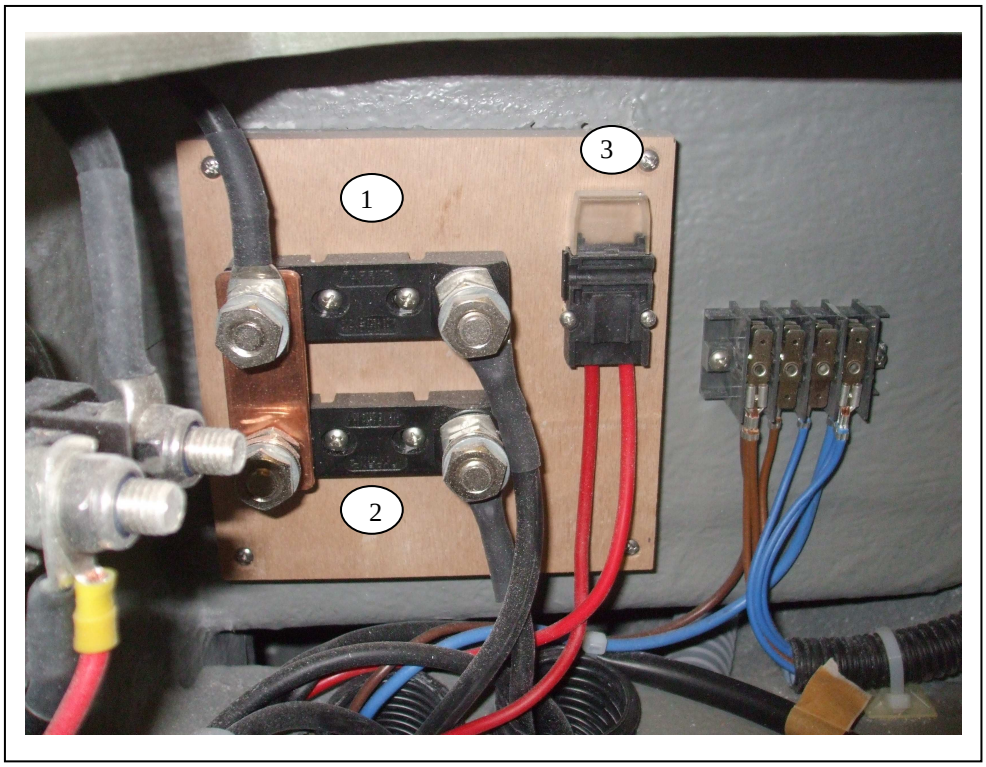
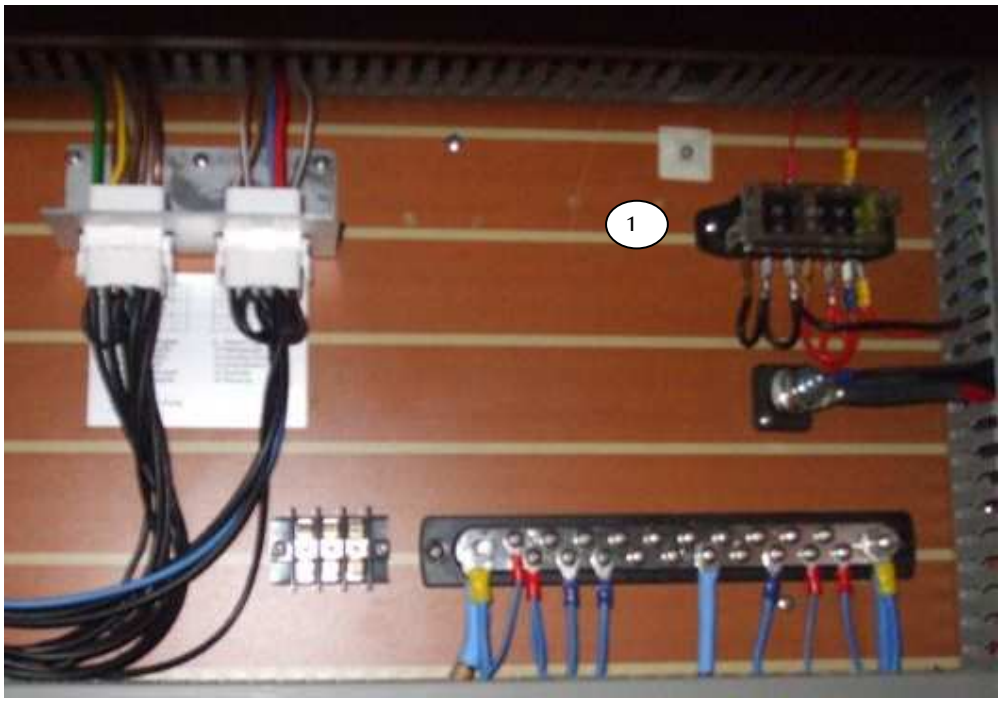


Figure 14: Main fuses

1 = General consumer
2 = engine
3 = steady plus
4 = termina of lighting port side

Further distribution to the “general consumption” is via the **power circuit distributor,** (switch board) above the starboard chart table.



1= red load circle heater/ black control circle heater

Figure 15: Control panel with connection numbers

1 = Drainage pump
2 = refrigerator
3 = Navigation instruments
4 = Reserve
5 = free
6 = Positions lights
7 = Top light
8 = Tricolour light
9 = Anchor light
10 = Lighting port side
11 = Lighting star board
12 = Water pump

4.5.3 Identifying the cables

The following numbers are to be found on the electric cables. Thus it is possible to check the clamped connections and leads easily.

1 = Bow/Stern light	2 = Steaming light	3 = Tricolour light
4 = Anchor light	5 = Interior lighting port	6 = Interior lighting starboard
7 = Navigations instrument	8 = Auto pilot	9 = VHF
10 = Pressure water pump	11= Bilge pump	12 = Refrigerator
13 = Heater	14 = radio	15 = 12 V socket
16 = Res.		

4.5.4 Control panel data

Manufactured by Philippi
Circuits with thermal protected switches
Ammeter
Switch
Combined indicator voltmeter
for water/diesel + holding tank (optional) indicators
12 V socket

Direct current consumers
The main circuits are the following:

Navigation lights	Refrigeration unit for cool-box
Water pumps	Engine instruments/Tank indicator
VHF Radio/ radio	Electronic navigation instruments
Auxiliary consumption	Bilge pumps, Shower/Bilge
Anchor winch	Self steering gear

4.5.6 Battery Charging

The yacht is equipped with a 12 V 75 Ah AGM starter/consumer batterie or optionally 1 x 95 Ah AGM, installed under the port side salon berths. Both batteries are maintenance-free and protected against leakage.
The batteries are charged via the engine alternator. As soon as the shore connection is switched on, the battery charger starts charging all batteries.

Alternating current consumers

The fixed 230 V connections are for the battery charger and hot water provision. The 230 V sockets in the panel of the land line unit are intended for carrying out small repairs with electrical machines when you are on a sailing trip or for connecting other comfort consumers.

REMEMBER
The power of shore connections is usually limited. Max. 600 – 800 Watt.

4.5.7 Auxiliary supply

Navigation lighting must have absolute priority. If there is a drop in capacity caused by a technical fault in the supply, all other consumers must first be switched off. Running the engine, even when sailing, can recharge the batteries, which enables you to switch on the second most important consumers .

4.5.9 Terminals/Supplies

In the event of a fault it is necessary for its elimination to check whether the distribution points are receiving any current. In this page we want to show you where the terminals and supplies are positioned and how to find them on your boat.

Distributor N°1
1x4 under saloon cushion port side on port side galley

Distributor Nº 2
supply is on the side in front off the chainplate support starboard

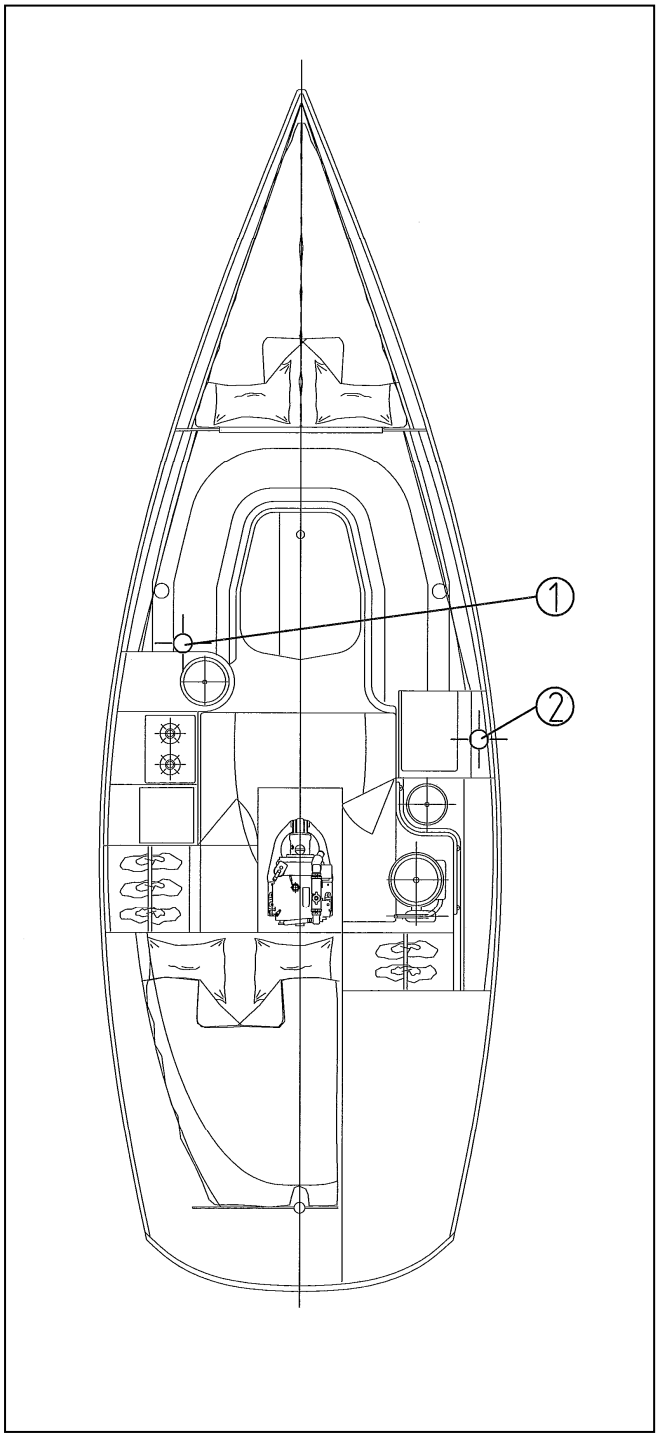


Figure 16: Terminals

4.5.10 General consumers

This particularly includes the interior lighting with sockets. All lights have an integral switch so that it is possible to use the electricity only where required.

4.5.11 Electric wiring diagram

The wiring diagram helps the specialist when looking for faults. It shows in a diagram the layout of the 12 V and 230 V system.

Important
Incorrect exposure to the electrical installation can cause severe injury and burns.

Important
Before setting out: check the battery voltage and functioning of the navigation lights

Important
Never
work on live electrical installations,
choose more or less powerful fuses and thermofuses,
install electrical appliances that exceed the permissable loading of the power circuit.

Important information concerning the alternating current installation:

WARNING

In order to avoid the risk of electrocution (electric shock!!!) or fire:

Never let the shore connection cable hang in the water
Always connect the shore connection cable on board first and then on land

Do not change the shore connection plugs
(Adapters, e.g. in Denmark, should be left on board)

Repairs on the 230 V installation should only be carried out by a specialist.

4.6 Bilge systems

4.6.1 Anchor locker

The **anchor locker** is watertight from the boat. It empties outboard directly through an opening.

Components

1. Drainage pipe extensions
2. Drainage pipe
3. Mechanical bilge pump
4. Outlet in Cockpit
5. Outlet electric pump
6. Electrical bilge pump
7. Drainage pipe electric pump
8.

4.6.2 Hand bilge pump

A tube of adequate length, which also reaches the bow and the aft cabin, lies in the saloon in the storage space on portside. Via a fixed tube it leads to a manual bilge pump that is installed in the cockpit sunken into one of the sides of the cockpit locker. The water is drained via a cockpit outlet on starboard, which, as a U-trap, reaches under the aft deck.

Tip for pumping

A pail is an excellent pumping device. You should always have one ready to grab in the cockpit locker!

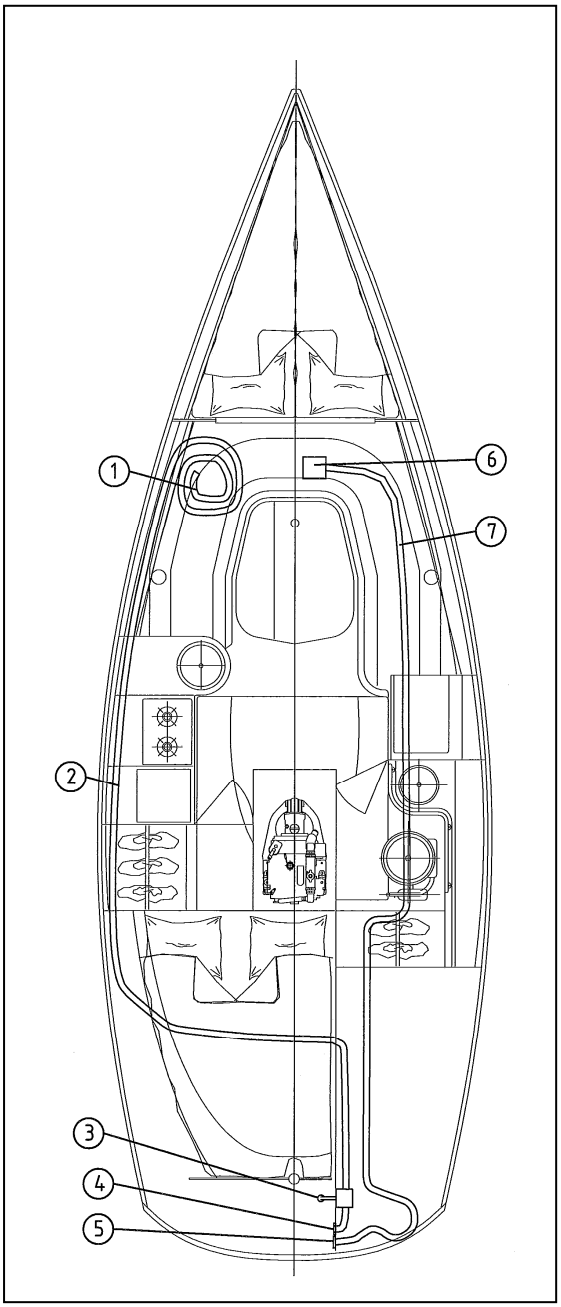


Figure 17: Bilge syste

Attention

The total pumping capacity may not be sufficient when the yacht collides with floating objects. Take measures for such an exceptional situation by having materials available to stop leakages.

NOTE
The hand lever is easily accessible, fixed in locker seatlid

4.6.4 Piston pump

A piston pump is an excellent bilge emptying device. Every boat should have one on board and it should always be accessible in the galley locker.

4.6.5 Electric bilge pump

In addition we have installed an electric bilge pump with a capacity of 40 l/min. The suction filter with return valve is under the galley towards the middle of the bilges. The outlet is on the flat part of the stern. The switch is on the navigation panel among the group of switches.

WARNING
The total pump capacity will probably not be sufficient to empty the boat in the event of a collision with solid objects. Take measures for such exceptional events with collision mats and other devices.

NOTE
Both bilge systems only work if the suction filters are clearly submerged. Small quantities of water should be removed with a sponge or a dustpan.

4.7 Rudder system

The Dehler 29 has tiller steering. The balanced rudder has a conical rudder shaft made of salt-waterproof solid aluminium with welded on aluminium stabilisers.
Top and bottom rudder bearings are self- aligning, which ensures easy steering even when the forces on the rudder increase.

Components

1. Tiller with fitting
2. Pin for rudder restriction
3. Rudder head with safety bolts
4. Self-aligning bearing
5. Distance ring
6. Rudder shaft
7. Rudder stock
8. Self-aligning bearing
9. Distance ring
10. Rudder blade

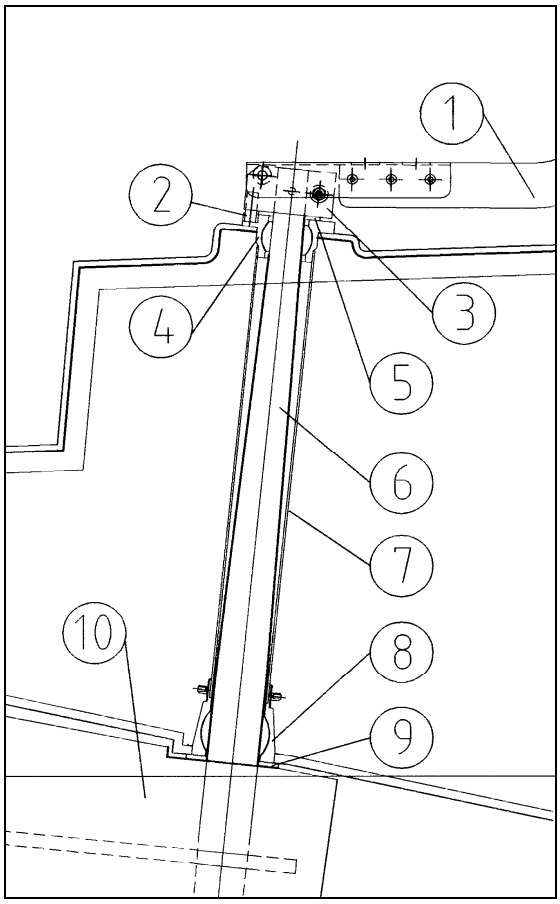


Figure 18: Rudder shaft system

Attention

When the steering system fails, the yacht should be turned head to wind

4.8 Gas installation

The gas installation of the **Dehler 29** for the cooker was installed in accordance with the German regulation, G 608, and in compliance with the European Standard EN 10239. The stamped test certificate is attached to the documentation for your boat.

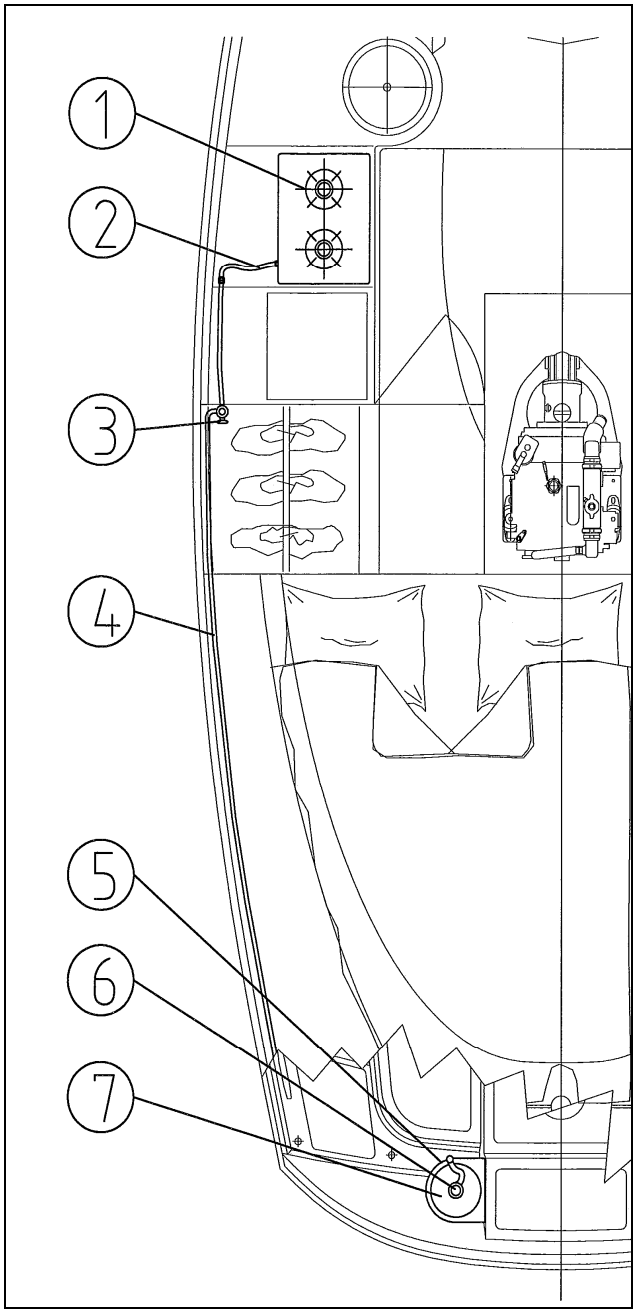
Components

1. Gas stove
2. Flexible tube
3. Stopcock gas stove
4. Fixed gas tube
5. Gas cylinder container
6. Gas pressure regulator
7. Gas cylinder 2 kg

Handling of gas installation

Please use following instruction to handle
gas installation:

- Open the shut-off valve in the bottle emplacement in the cockpit port
- Open the valve in the locker for the cooker
- Push on one of the burner valves and
  light the gas.
- Keep the valve opened, until the safety
  pilot stays alight.



F
Figure 19: Gas installation

IMPORTANT
When switching off, always observe the following sequence:
Turn off burner – Shut off valve in locker - Close valve in bottle emplacement.

Some additional hints on how to avoid problems with your gas installation:

Close the valves of the supply pipe and the bottle, when you are not using the cooker. **In emergencies, immediately close the valves.**

Regularly check the liquid gas installation, looking for possible leaks. Check all connections with soapy water or liquid detergents (For this the burner valves of the cooker must be closed and the bottle and installation valves must be opened).

If there are any leaks, close the bottle valve and have a technician repair the whole installation before using it again.

Since flames consume oxygen, good air intake and ventilation is necessary. Do not use the cooking stove to heat the cabin.

The valves of empty gas bottles should be closed and disconnected from the installation. Keep the screw cap at hand.

Do not use the gas bottle emplacement to store other pieces of equipment.

Do not leave the yacht unattended, when the cooker is being used.

Regularly check the hoses of the liquid gas installation, at least once a year. Replace them if they are damaged.

If you replace the cooker, take care that the new cooker has the same working pressure.

Figure 20: Gas shut-off valve

Important Note
Every two years you must comply with the obligatory inspections in accordance with Regulation G 608 and ask the technician for a certificate.

Do not use solutions containing ammonium for checking the pipe.
Never use a naked flame to search for a leak.

Do not smoke and do not use a naked flame when connecting up or replacing a gas bottle

4.9 Pump - WC

The WC on board is a commercially available pump toilet. The fresh water intake is opened and the contents are pumped out through the outlet valve. See also the supplier's instructions for use.

IMPORTANT
Do not use chlorinated cleanser for WC and
waste water tank to protect the tank for damage.

4.9.1 Rapid shut-off valves

From left to right in the locker under the hand washbasin are the following rapid shut-off valves:

1 = Outlet holding tank
2 = WC sea water inlet

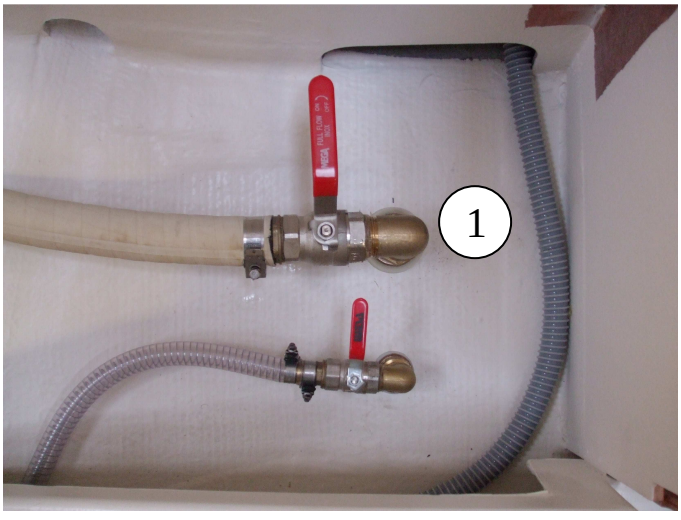


Figure 21: Rapid shut off valve shower room

4.9.2 Holding tank

The 35 l holding tank is situated in the accessible rear locker starboard. Regular checking via the control panel is necessary so that the ventilation pipe does nor get clogged. If possible, the tank should be emptied at every sewage emptying point and only exceptionally be emptied outside of bays or harbours (normally when you are sailing with the engine). The discharge valve is opened for this purpose.

4.9.3 Holding tank indicator

How full the holding tank is can be seen on the indicator in the navigation area. This should regularly be checked.

NOTE
The state of the holding tank must be regularly checked
so that the ventilation pipe does not become clogged.

4.9.4 Emptying of the tank

Where sewage emptying stations are available, the tank contents should be drawn off through the standard deck screw fitting (1).

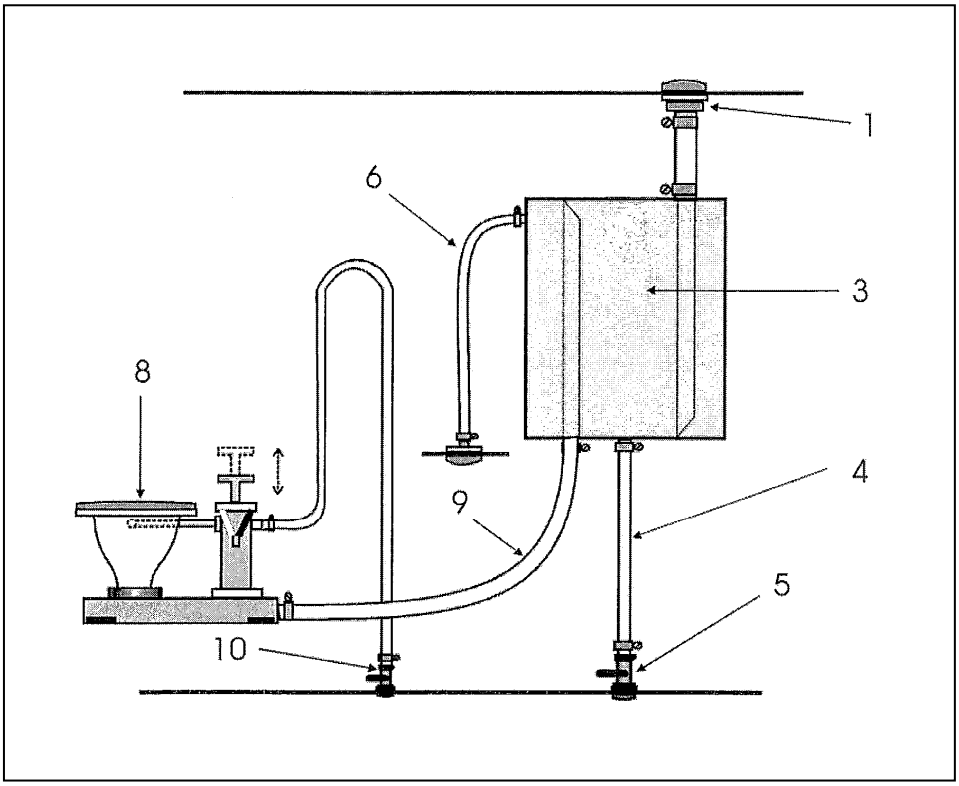


Figure 22: Holding tank system

Components

1 = Suction fitting	3 = Holding tank	4 = Discharge pipe
5 = Quick shut-off valve outlet	6 = Tank ventilation	8 = Pump WC
9 = Intake hose	10 = Quick shut-off valve with sea water intake	

IMPORTANT
Only open the quick shut-off valves for working the toilet installation!

5. Fire protection

5.1 Fire Prevention

During the construction of the **Dehler 29** we have paid special attention to avoid the risk of fire. This includes careful consideration of the choice of materials, the distance between the cooker burner flames and the surrounding built-in furnishings and the onboard diesel engine, with the engine compartment lined with self-extinguishing insulation material.

As owner of the yacht you should keep everything the same and observe the following instructions:

IMPORTANT
Keep the bilges clean and check regularly whether the yacht smells of diesel fuel or gas.

Do not keep inflammable material in the engine compartment. If you store non-inflammable materials in the engine compartment, they should be secured so that they cannot fall into the engine system and do not hinder the access to the engine.

You and your crew can contribute to fire prevention by complying with the following:

Never

block the way to exits and hatches;

block access to safety devices such as fuel and gas valves or switches on electrical installations;

change anything on the sailing boat (certainly nothing concerning electric, fuel or gas systems);

leave the yacht unattended, whilst using cookers and/or heating appliances.

Never

use gas lamps on the yacht;
fill the tank or replace the gas bottles with the engine running or whilst using the cooker;

smoke when handling diesel or gas.

5.2 Active fire protection

The well-known sources of risk on board are
the cooker in the galley and the engine compartment.
If in spite of all preventive measures a fire occurs on board, you have at your disposal two fire extinguishers, installed by you or by the shipyard at the points marked:

Nr. 1 **Dry powder extinguisher** under the navigation seat
Fire category PG2 / 13A89B

Nr. 2 **Dry powder extinguisher** in the starboard locker on the forward bulkhead
Fire category PG2 / 13A89B

Nr. 3 **NOTE**
Next to the second companionway step there is an opening.
In the event of fire, a fire in the engine compartment can be extinguished through this opening
Remove grey closing valve,
put the snout of the fire extinguisher into the opening...

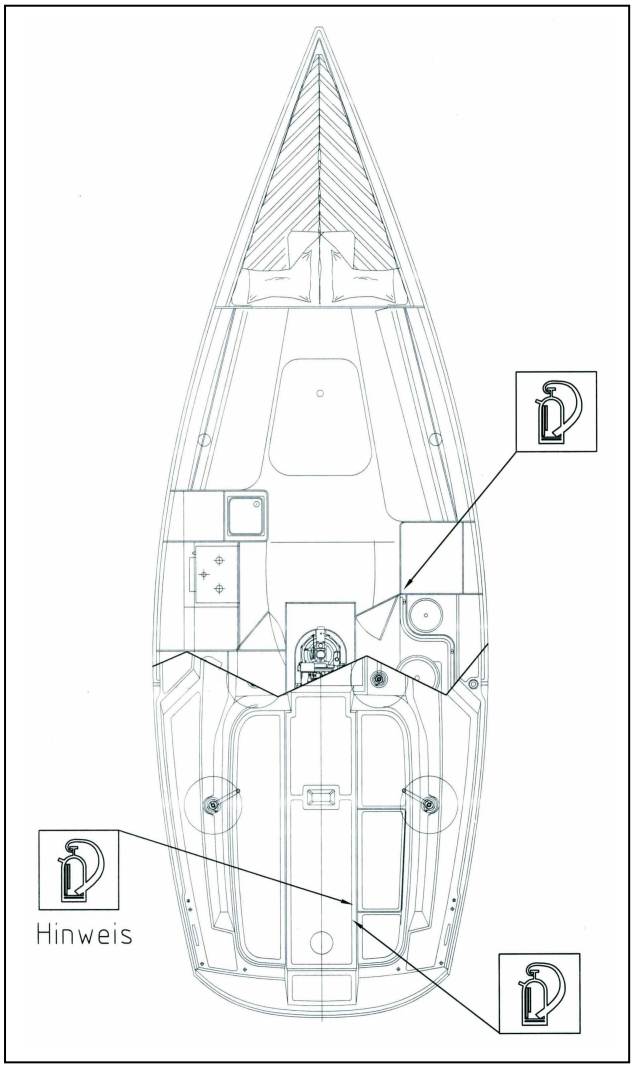


Figure 23: Fire extinguishers

NOTE
In addition you should keep a light **fire blanket** handy in the galley, made of glass fibre and highly effective in case of fires caused e.g. by overheated fat.
No oxygen > no fire.

5.3 Firefighting

If in spite of all preventive measures fire breaks out on the yacht, you should proceed as follows:
All persons who cannot actively fight the fire, must go on deck either
via the companionway, or
if a fire starts in the galley or engine compartment through the escape hatch over the forward berth

5.4 In the event of fire in the galley

Immediately close the gas supply valve!
Extinguish the flames with the fire blanket. It can be re-used afterwards. If furnishing elements are on fire, use the fire extinguisher.

5.5 In the event of fire in the engine compartment

Important
On risk of fire close the safety valve on the tank.
This can be reached through a hatch in the head nearly by fuel filter at fuel tank.

First close the fuel supply valve on the tank (see photo page 25).

Do not remove the companionway and do not open the companionway bulkhead.

There is a capped hole in the companionway bulkhead. Remove this cap. This provides a small opening. Place the nozzle of the fire extinguisher into this hole and empty the fire extinguisher completely.
Wait a few minutes before opening the engine compartment to check the damage.

5.6 In the event of fire in the living area

Hereto the fire blanket can be useful.
A piston pump should be at hand in the equipment locker in order to activate the dry powder extinguisher just in emergencies.

Important information

It is the task of the boat owner to, supply the yacht with fire extinguishers. At delivery the recommended installation sites are shown by stickers. The gard shows the mountiy places by stickes. Owner or Shipper hast take care of:

regularly check and service the fire extinguishers,
see that fire extinguishers are replaced after their expiry time.
The same goes for fire extinguishers that have been used.
The new fire extinguishers should have at least the same extinguishing capacity as those installed.

It is the task of the skipper or the boat owner to see that
both fire extinguishers are easily accessible and
that all persons on board know about
the position and use of fire extinguishers and fire blanket,
the location and function of the extinguishing hole for the engine compartment,
exiting via the forward hatch.

6 Heating (Option)

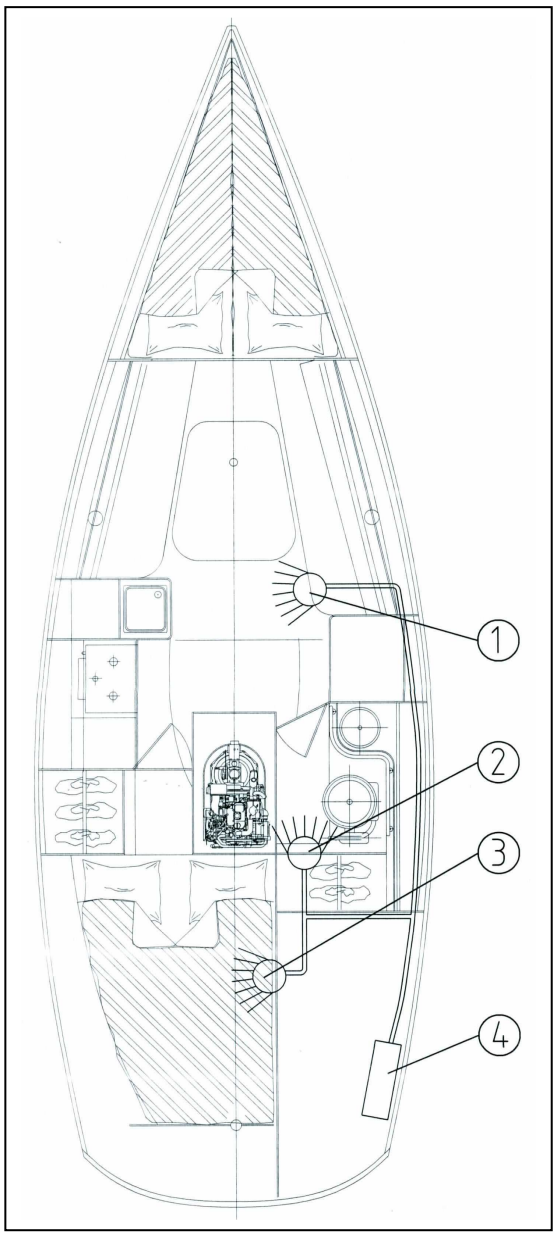
In order to make the sailing season less dependent on weather conditions and create a good interior climate in the **Dehler 29,** a Webasto Air Top 2000D diesel heater can be installed. The heater is installed at the starboard side aft in the stern storage space and is accessible through the starboard locker seat. See the manufacturer's Instructions for use.

Combustion air
The chimney for combustion air is installed on the starboard side of the flat surface of the stern.

6.1 Hot air

The air in the boat is drawn into and heated in the heat exchanger via the heater intake. Then the air is carried through a pipe system to the four outlets in the cabin, bow, rear cabin and shower room; the quantity of air can be regulated at all hot air outlets, except in the cabin.

Air distribution of the diesel heater



1 Hot air outlet saloon

2 Hot air outlet shower room

3 Hot air outlet aft cabin

4 Diesel heater

6.2 Dispensing pump/Filter

The dispensing pump and the fuel filter are mounted behind the diesel filter and are accessible through the cover in head.

6.3 Temperature control

The control element is mounted on the panel in the navigation area. The heating can be steadily adjusted. The thermostat is installed on the upper left of the navigation bulkhead.

IMPORTANT
The heating **must** continue running for 15 min. after turning off
in order to cool the combustion chamber. It is a automatic switch-off.
Do not switch off the main switch before time

Technical data:
All other data can be found in the extensive information supplied by Webasto. You should inform yourself about the start-up phase and possible causes of technical faults.

7 . Hull openings, sea cocks

Openings under the waterline are possible weak points, to which we have therefore paid a lot of attention.
The hull openings are made of a brass alloy and where necessary fitted with a fast shut-off ball valve. This basic set-up is completed by a suitable hose connection on the hose side of each valve. Each hose is secured by two clamps.

List of hull openings

1. Skin fitting 1 ½“ depth sounder (optional)
2. Skin fitting 1 ½“ log (optional)
3. Skin fitting ¾“, sink drain with fast-closing globe valve
4. Skin fitting ¾“, washbasin drain with fast-closing valve
5. Skin fitting ¾“ raw-water entry for heads with fast-closing globe valve
6. Skin fitting 1 ¼“ faeces tank outlet with fast-closing globe valve
7. 2” exhaust exit
8. Skin fitting ¾“, mechanical bilge pump
9. Skin fitting 1 ¼“, electrical bilge pump (deck)

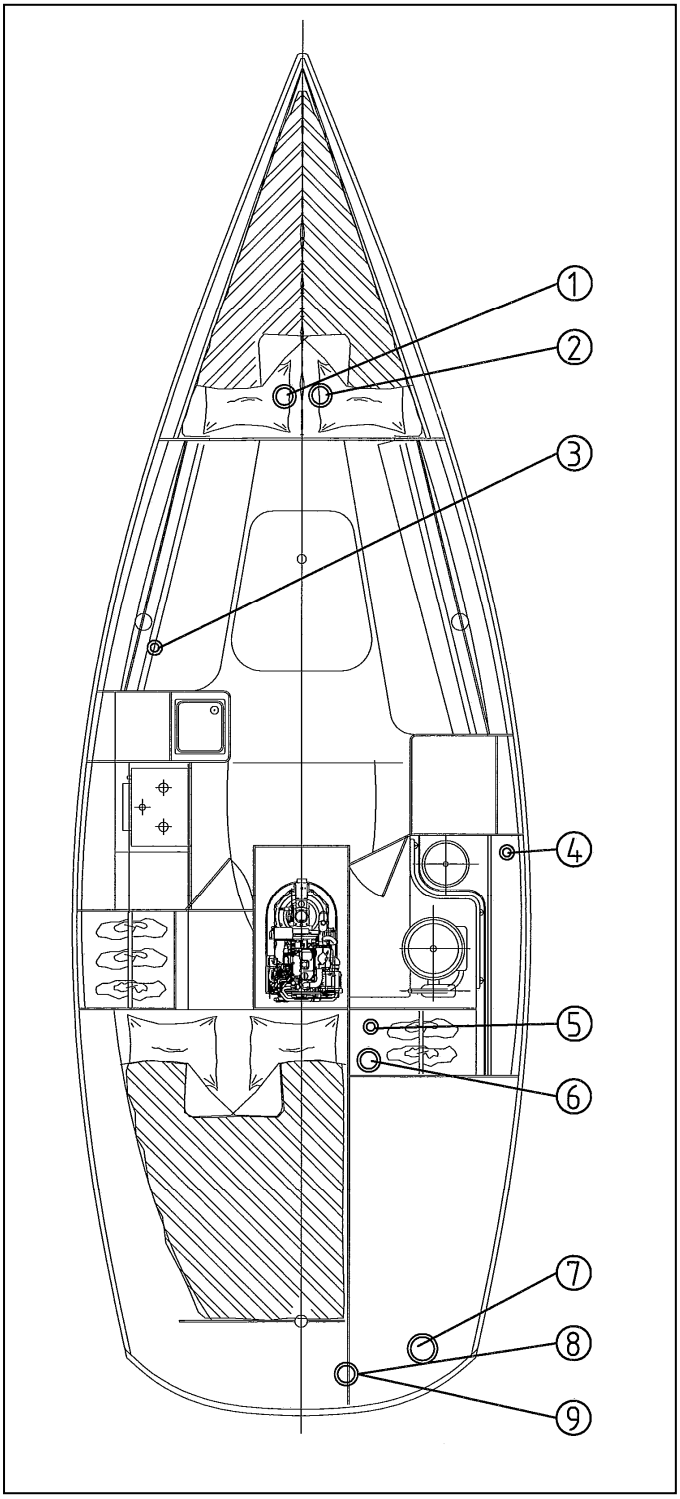


Figure 24: Hull openings,

7.1. Leak stoppers

In the event of a seacock or hull opening being damaged your **Dehler 29** is equipped with several leak stoppers made of soft wood, the diameters of those fit to the different sizes of hull opening so that each opening can be blocked.

Important

Close the ball valves, when you leave the boat. Ball valves in enclosed spaces (for example toilet areas) should only be opened for use.

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Note

With ball cocks you can easily see if they are closed or open:
CLOSED: lever is transverse to the hose or pipe
OPEN. the lever is aligned to the hose or pipe

8. Anchoring, towing and mooring systems

8.1 Anchor

A 10 kg galvanized anchor (considered to be an anchor with great holding power).

8.2 Second anchor

Depending on its sailing area, a boat must be equipped with a second anchor, length of chain and anchor line. Another anchor with a great holding power should be chosen, e.g. a Danforth anchor, which can be stowed safely in the equipment locker.

8.3 Mooring ropes

– 4 ropes, Ø 14 mm, 15 m long, polyamide, type PP-Multifil

8.4 Towing rope

In case the boat needs to be towed, it should have a towing rope on board which is used exclusively for this purpose. Dimensions: 14 mm diameter, polyamide, 3-braid hawser, length 55 m.

Important

Before setting out, the skipper must ensure that

– the anchor locking pin is operational,
– the anchor chain of the bow anchor is fixed,
– the necessary mooring and towing lines are on board and ready for use.

9. Environmental protection

9.1 Fuel and oil

When filling your **Dehler 29** you should be extremely careful. A piece of cloth around the filling cap can avoid fuel getting from the fuel hose into the water. In your engine manual you will also find a diagram with a graph showing specific fuel consumption. This gives a good indication for the engine's optimum number of revolutions.

To change the oil of the engine a suction pump is placed in the opening for the oil dipstick, since it cannot be drained as for a car. The oil should be changed at least once a year, even if you have not made many trips. Before draining out the oil, let the engine warm up.
A well-maintained engine should never leak. Nevertheless in order to avoid even the slightest oil spill into the bilges and therefore into bilge water pumped out, the engine base is shaped like a closed pan. Any water that is collected there with possible traces of oil in it must be drawn off through a small bilge pump (a suction pump should be included in the equipment), be put into a separate container and disposed of together with the used oil. In any case you should have oil-binding agents on board.

9.2 Rubbish

Rubbish does not belong in the water which goes without saying for any water sports enthusiast. This holds good too for biologically degradable rubbish. On your boat you should have a fixed place for rubbish, which you should collect and dispose of separately.

9.3 Noise

A wet exhaust of a diesel engine equipped with a silencer greatly reduces engine noise. Rubber bearings, flexible couplings and engine compartment insulation reduce noise emissions even more. You should nevertheless avoid accelerating too quickly and reduce the number of revolutions in sea areas with heavy traffic.

9.4 Backwash

Natural shores are sensitive to backwash. Please keep an adequate distance between your boat and such shores. The wave profile of your yacht will give you a good idea where to reduce speed in order to avoid unnecessary backwash. In narrow waterways you should also heed the relevant notices.

9.5 Exhaust fumes

Regular checking of exhaust fumes is necessary. The exhaust should neither expel black smoke nor blue clouds. If this is the case you must clean either the air filter of the engine – something you can do yourself – or a specialized workshop must re-adjust the settings of the engine.

9.6 Antifouling Paint

The part under the waterline of the **Dehler 29** can be protected by antifouling paint, since growth and vegetation means more energy consumption just to run the boat. The range of protective paints is large, their effect is wide and therefore the type of paint can be suited to every type of water.
If the anti-fouling paint needs to be sanded and repainted, discuss the work with your winter storage firm. During the sanding work the surface under the boat must always be covered with plastic or foil, in order to be able to dispose of the sanding dust as special rubbish.

9.7 Paint remover

Most paint removers are very aggressive and if possible should therefore not be used. Mechanical removal of the paint layers, e.g. with a scraper should be preferred above all other methods.

9.8 Holding tank

If your yacht is equipped with a sewage collection tank, it is essential to take care that in areas where evacuation is forbidden, the seacock – the connection for direct pumping outboard – is closed.
The capacity of the tank is limited. You should regularly check the level on the control panel in the navigation area. As far as possible you should use the toilets in the pleasure harbours or other places on land.

10. Ten golden rules for water sports enthusiasts

Avoid sailing into canebrakes, reed beds and all other densely covered shore areas. Avoid shingle, sand and mud banks (resting and feeding areas for birds) as well as shoreline copses. Also avoid shallow waters (spawning areas), especially those with aquatic plants.

Keep sufficient distance between the boat and canebrakes, reed beds and other densely covered shore areas as well as shoreline copses – on wide rivers for example 30 to 50 meters.

In nature reserves comply absolutely with all relevant directions. Water sports are frequently forbidden in nature reserves, all year or part of the year, or are only possible under certain conditions.

In "Internationally protected wetland areas" be especially considerate when undertaking water sports. These areas are the living spaces of rare animals and plants and are therefore particularly worthy of protection.

When mooring, always use the places provided or such places where you cannot obviously damage anything.

Even on land, do not go too near to reed beds and other densely covered areas, so as not to disturb and endanger the existence of birds, fish, small animals and plants.

Observe and take photographs of animals as far as possible only from a distance.

If you are in a mud-flats area, do not go near to seal banks, so as not to disturb or drive away the animals. Keep a distance of at least 300 to 500 m between the boat and areas where seals and birds gather and in any case keep near marked waterways. Sail as slowly as possible in these areas.

Help keep the water clean. Rubbish does not belong in the water, particularly not the contents of chemical toilets. This waste must be disposed of, just like used oil, at special disposal points in harbours. When in a harbour, only use the sanitary facilities on land. When tied up in a harbour, do not run the engine unnecessarily, so as not to pollute the environment additionally with noise and exhaust fumes.

Make these rules your own and before going on a sailing trip find out about the regulations in the area you want to go to. Pass this knowledge on with your own exemplary attitude towards the environment to younger people and especially to unorganised water sports enthusiasts.

11. Maintenance, repairs and cleaning

11.1 Hull, deck

Winter storage is the right time to thoroughly inspect the hull and other weight-bearing elements of the construction. If the gel coat is damaged and the laminate has become visible, this fine layer must be repaired, starting with sanding the bottom layer, the application of a new gel coat and sealing it subsequently by sanding and polishing. You can get the right repair packages and useful information from your distributor.

For cleaning and servicing all components of the technical equipment of the boat you will find useful information in the different chapters of this manual or in the special manufacturers' installation and maintenance instructions, which are among the boat's documentation.

Information for maintenance of the deck

Stainles steel fittings: Polish matt or dark areas so that the stainless steel keeps its anti-corrosion properties

Winches, Blocks: Dismantle, clean and treat with suitable grease at least for winter storage

Windows, Hatch covers: Wash with clean water and polish with a soft cloth

Teak: Regularly wash with clear water. For a richer colour, sand lightly and impregnate with oil

11.2 Cleaning

Clean the parts of the boat under the waterline of your **Dehler 29** as soon as the boat is taken out of the water. High-pressure cleaning machines remove every kind of vegetation. The next task is the repair and cleaning of the gel coat and varnish. All paint manufacturers give extensive information with their treatment and painting systems.

For boats sailing in salt-water areas: Salt residues bind with water and accelerate corrosion. Where possible, wash the boat with freshwater

11.3 Ventilation

No matter whether your boat is stored under a roof or in the open air during winter, correct ventilation avoids corrosion, mould stains and fungi. In clear weather, the low air humidity in winter quickly lets your boat dry out.

11.4 Rigging

During winter storage, the rigging should also be thoroughly checked. The standing and running rigging especially but also the halyard block housings and the mast and boom profiles

should be checked. When the rigging is down, you can repair every small bit of damage with very little effort.

Rigging check:

Wash the entire rigging abundantly with fresh water before winter storage.

For winter storage you should examine the standing and running rigging, the halyard blocks and shroud bottle screws. Grooves in the pins: essential to change the pins.

Grease moving parts with suitable lubricants. For shroud bottle screws graphite is particularly recommended. Spray the sliders of the mainsail now and then with a lubricant.

If the mast or boom shows damage, the areas should be cleaned and a paint suitable for aluminium applied.

Damaged areas on the stainless steel fittings or those covered with rust film should be polished so that they retain their good properties.

There is always the possibility with dismountable masts of leakage at the mast collar. Where the mast profile/collar meet, seal additionally with silicone rubber.

11.5 Care of the Sails

Synthetic sails are sensitive to UV rays. If the sails remain on the main boom and on the roller reefing installation they should always be covered with mast covering and foresail tarpaulin.

Do not stow the sails for long periods in wet conditions.

The sails should likewise be rinsed with fresh water before winter storage and then well dried, so that they do not get spotted with mildew.

Seams and cable eyes should be thoroughly checked and if necessary repaired.

IMPORTANT before every sailing trip:

Check hawsers, cordage, shroud bottle screws and cotter pins
Fix cotter pins with adhesive tape or by bending
Replace bent or damaged pins

11.6 Engine and propeller

The diesel engine must be made winterpoof. We recommend fitting a long hose on the nozzle of the water pump, see Volvo manual, preparing an anti-freeze mixture in a bucket and letting the engine draw in this mixture until it comes out at the exhaust. In this way the engine and the exhaust system will be protected from frost and corrosion.

NOTE
The zinc ring/magnesium ring (sacrifice anode) should be renewed annually.

Note

During winter storage the propeller should be cleaned of any vegetation and be inspected. If deformed, dented or nicked these areas must be repaired. Subsequently it may be necessary to have the propeller balanced again.

11.6.1 Interval between engine servicing

All further information on the inboard Volvo engine can be found in the documentation provided by the manufacturer.

11.6.2 Exhaust system /Maintenance

The seawater cooled exhaust system with water collector, exhaust hose and swan neck is winterproof and must not be emptied of water. The hose clamps should be tightened annually.

11.7 Electricity

Contacts should be free of corrosion and be firmly connected. Once a year you should check all connection.
The battery needs special care. Even the fact that it is “maintenance-free” does not mean that you can leave the battery connected on the boat in frosty conditions. Only a charged battery, stored in a frost-free area and from time to time recharged, will work for years without trouble

NOTE
Avoid major discharge of the batteries on board
Even maintenance free batteries must be charged up in winter
(charging condition at least 50%) so that they do not freeze

Once a year all contacts should be checked and sprayed with a special spray

Make yourself familiar with the electrical system, so that you can react quickly in the event of a fault.

11.8 Hose clamps

All hoses and pipes under the construction waterline are fixed with double hose clamps. Every year you should check if the clamps still fit firmly.
Water tank

NOTE
From time to time change the water in the tank. In addition you should add commercially available water purifying agents e.g. Micropur to the water

NOTE
For cleaning the tank has an inspection cover.
The seal should be smeared with Vaseline.

The inspection cover must be well tightened.

Important
The hose clamps must be
tightened annually. When there is a risk of freezing the system should be emptied via the bleeding points using the pressure water pump while the cold-water cock is open.

11.9 Heat exchanger

IMPORTANT
Heed the information supplied by SIGMA for maintenance and exchange of the thermostat and the heating element!

When there is danger of freezing the heat exchanger must be emptied. How to do this is described in the manufacturer documents.

For winter storage, tanks should be empty..
Fuel tanks: If only a small quantity of diesel remains, the tank should be emptied and ventilated.
Fresh water tanks: Empty completely and open them. Do not forget the electric fresh water pump.
Holding tank and pipes: Clean well (with mild household cleaners) and open them. Cover the ends of open tanks, pipes and hoses with a cloth or piece of gauze (Air = YES, Dust = NO).

11.10 Pump WC

After cleaning, drain the pump toilet via the drainage tap or prepare an antifreeze mixture and then pump in so as to protect the toilet against frost. In winter, ball valves should be left open. With heavy frost they could otherwise split open.

The hose clamps should be checked annually and tightened if necessary.

11.11 Holding tank

NOTE
Never use strong WC cleaners in the holding tank

NOTE
Holding systems should be empty during storage at freezing temperatures

It is perfectly sufficient 2 –4 times in the season, depending on the frequency of use, to fill the tank a third full with seawater and a small squirt of washing-up liquid and sail for a few hours:

The rubber valves remain soft and the tank will be cleaned of grease.

11.12 Paint

If you have any questions about paint, discuss them with your storage company or your distributor. If possible, always keep with the compatible systems of one manufacturer.

11.13 Worn and spare parts

As an experienced skipper, you will not have any trouble finding original spare parts. If you need information, please ask your distributor.
If you need spare parts and the original parts are not available, then you should pay attention to the characteristics given in the manual, to keep the **Dehler 29** technically at the same high level as when you acquired it.

11.14 Hull openings

Servicing information

Hull opening seals must be checked at regular intervals for water resistance.
Check hose clamps for a firm fit

The hull openings should be checked every year for electrolysis
If damaged new openings must be fitted. The replacement should be carried out by a specialist firm.

11.15 Repairs

Any specialist company can repair the hull. The interior construction has been designed in such a way that nearly all areas are easily accessible without upheaval. For repairs of the technical equipment, please see a specialist company. Your distributor will be pleased to help you.

12. Winter storage

With regard to winter storage, we have already given useful information in different paragraphs. The basic principle should be: even winter storage firms must be technically up-to-date. This is true for the environmental conditions of storage, and for storage blocks, fire prevention and accessibility to the yacht. There must also be established rules for work that ought to be carried out by the owners themselves, in order not to interfere with other water sports enthusiasts.

13. Final remarks and tips

This manual complies with the guidelines of the harmonised European Standard EN 10240. Many of these guidelines will seem natural to you. Notwithstanding, we hope that the different chapters will help you to understand the technical systems and the idea behind their design and set-up. As we already said in the introduction, the purpose of the manual is a carefree use of the boat. Among the matters the manual does not deal with is e.g. personal safety equipment.

This is exclusively the responsibility of the skipper. Of course there should be enough lifesaving equipment available for everybody on board. However, the provision and servicing of a VHF radio or Handy transceiver, a life-raft, distance distress signals, first-aid kits, important spare parts and repair tools, etc also should be considered.

Since the fire protection guidelines are so important, we draw your attention again to the fact that fire extinguishers must be regularly serviced and that the skipper must inform the crew how to use them.
People who are well equipped for emergencies, often do not have any problems. But just in case you find yourself in the midst of an emergency, be assured that your yacht is equipped with the right aids. Finally, we'd like to give you some useful addresses:

Boatmakers' Federation

If you need a shipyard for renovation or alterations, repairs, storage or other services, such as, for example, the appointment of an expert, please contact:

Deutscher Boots- und Schiffbauer-Verband
St. Petersburger Str. 1, 20355 Hamburg
Postfach 30 12 27, 20305 Hamburg
Tel. 040 - 35 28 17, Fax - 34 42 27

If you have any questions about sailing or legal regulations, please contact the department for Waterways and Navigation. Here are also the addresses of the regional **Navigation Authorities** or those relevant in your case.

Wasser- und Schiffahrtsdirektion Nord
Hindenburgufer 247, 24106 Kiel
Tel. 0431 - 33 94-0, Fax - 33 94-348

Wasser- und Schiffahrtsdirektion Nordwest
Schloßplatz 9, 26603 Aurich
Tel. 04941 - 6 02-0, Fax - 6 02-378

Wasser- und Schiffahrtsdirektion Ost
Stresemannstr. 290, 10963 Berlin
Tel. 030 - 26 99 0-20, Fax - 26 99 0-270

Wasser- und Schiffahrtsdirektion Mitte
Am Waterlooplatz 5, 30169 Hannover
Tel. 0511 - 91 15-0, Fax - 91 15-400

Wasser- und Schiffahrtsdirektion West
Cheruskerring 11, 48147 Münster
Tel. 0251 - 27 08-0, Fax -27 08-115

Wasser- und Schiffahrtsdirektion Südwest
Brucknerstr. 2, 55127 Mainz
Tel. 06131 - 9 79-0, Fax -9 79-155

Wasser- und Schiffahrtsdirektion Süd
Wörthstr. 19, 97082 Würzburg
Tel. 0931 - 41 05-0, Fax - 41 05-380

14. Warranty Card

In case of a warranty claim, please get in touch with your signatory.

15. Manufacturers' Information

This is a list of the firms whose guarantee and warranty conditions you will find in the documentation. These firms are ready to help you through their extensive service network. Nevertheless, if you have any problems, please contact your distributor.

PART INSTALLED	TYPE	INFORMATION	SUPPLIER
INBOARD DIESEL ENGINE	Volvo	Instruction manual	Fa. Volvo Penta, 24159 Kiel
Boat heater Control device Temperature sensor	Eberspächer	Technical description Instruction manual	Eberspächer Heizgeräte GmbH 17358 Torgelow
Cooling box	Isotherm BI 75 Top	Instruction manual	Buhk 28201 Bremen
Gear shift lever	Volvo	Installation manual Installation manual	VOLVO –Pentan S-40508 Göteborg
Winches, deck fitting Electrical winches	Harken	Spare parts list Servicing manual	Fa. Frisch 80805 München
Mechanical bilge pumps	Wahle BP 4410	Installation instructions Operating information	Jabsco 22844 Norderstedt
Pump WC	PAR-Brydon	Installation instructions Instruction manual	JABSCO GmbH 22844 Norderstedt
Fresh water pressure pump	Shurflo	Installation manual	Fa. Lilie 71634 Ludwigsburg
Compass	Suunto S116-F	Instructions for use	Fa.Simrad 24837 Schlewig
Folding propeller	Flex –O -Fold	Installation manual	Flex –O- Fold DK-6040 Egtved
Gas cooker	Mariner 2	User and Maintenance manual	Fa. Rheinstrom 56070 Koblenz
Navigation lights	Aquasignal	Installation instructions Test certificate	Fa. Aquasignal 28307 Bremen
Navigation instruments Self steering systems Log Echosounder	Raytheon Raytheon Raytheon	Installation and User Manual	Fa. Eissing 26723 Emden
Battery chargers	Mastervolt	Installation and User Manual	Sterling Power Products GB WR9 ONX Droitwich
Roller reefing system	Furlex	Installation and User Manual	Selden Mast S – 42677 Frölunda
Rigging	Selden	User Manual	Selden Mast S – 42677 Frölunda
Steering system Steering wheels	Jefa Streering Systems	Maintenance instructions	Jefa Steering DK2670 Greve
Hot water boiler	Volvo	User Manual Maintenance manual	Quick I 48124 Piangipane
Electric control panel	Philippi	Information sheet	Philippi GmbH 71686 Remseck
Anchor winches	Horizon	User Manual	Lewmar Mid Europe BV NL –08042 PD Zwolle
VHF Radio	Ravtheon	User Manual	Fa. Eissing 26723 Emden